

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

CONSOLIDATED UNDER
CASE NO. 05-10155 PBS

)
YISEL DEAN, Independent Administratrix of the Estate of)
STEVEN DEAN, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
)
v.) DOCKET NO: 05cv10155
RAYTHEON COMPANY, a Delaware corporation,) PBS
RAYTHEON AIRCRAFT COMPANY, a Kansas)
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air)
Express,)
Defendants.)
)
)
)
)
)
)
LISA A. WEILER, Administratrix of the Estate of SCOTT A.)
KNABE, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
)
v.) DOCKET NO: 05cv10364
RAYTHEON COMPANY, a Delaware corporation,) PBS
RAYTHEON AIRCRAFT COMPANY, a Kansas)
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air Express,)
Defendants.)
)

DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

NOW COME the defendants, Raytheon Company, Raytheon Aircraft Company, Raytheon Aircraft Credit Corporation, Raytheon Airline Aviation Services, LLC and Raytheon Aircraft Parts Inventory and Distribution Company, LLC (“defendants”), and hereby respectfully request pursuant Fed. R. Civ. P. 56 that this Court grant the defendants summary judgment on the entirety of the plaintiffs’ claims. As grounds therefore, the defendants state that the plaintiffs cannot prove their claims as a matter of law.

Specifically, the plaintiffs’ claims are barred because the sophisticated user defense precludes the plaintiffs’ claims of negligence, breach of implied warranty, and violations of M.G.L. c. 93A, as the Colgan mechanics did not reasonably rely on the Airliner Maintenance Manual and the actions of the Colgan mechanics and the pilots broke the chain of causation. Additionally, the peripheral Raytheon defendants should be dismissed because they are not proper parties to this lawsuit. Plaintiffs’ breach of express warranty claim is barred because the defendants did not provide any express warranty to plaintiffs. Also, plaintiffs’ purported claims for res ipsa loquitur and pre-impact conscious pain and suffering have been dismissed by this Court, and otherwise, fail as a matter of law. Plaintiff Weiler’s loss of consortium fails as a matter of law because she was not married at the time of the incident. Lastly, plaintiffs’ claims for “grief, anguish, bereavement and emotional trauma” are not recoverable as a matter of law.

The defendants hereby incorporate and reference Defendants’ Memorandum in Support of Their Motion for Summary Judgment and the exhibits attached hereto.

WHEREFORE, the defendants, Raytheon Company, Raytheon Aircraft Holdings, Inc., Raytheon Aircraft Company, Raytheon Aircraft Credit Corporation, Raytheon Airline Aviation Services, LLC, and Raytheon Aircraft Parts and Inventory Distribution LLC, respectfully request that their Motion for Summary Judgment be **ALLOWED**.

CERTIFICATE PURSUANT TO LOCAL RULE 7.1(A)(2)

Pursuant to LR 7.1(A)(2), defendants' undersigned counsel hereby certifies that prior to filing this motion, defendants' counsel conferred with plaintiffs' counsel and attempted in good faith, but without success, to resolve the matters in issue.

Raytheon Defendants
RAYTHEON COMPANY, RAYTHEON
AIRCRAFT HOLDINGS, INC., RAYTHEON
AIRCRAFT COMPANY, RAYTHEON
AIRCRAFT CREDIT CORPORATION
RAYTHEON AIRLINE AVIATION
SERVICES, LLC and
RAYTHEON AIRCRAFT PARTS AND
INVENTORY DISTRIBUTION LLC
By Counsel,

/s/ Peter C. Knight

Peter C. Knight, BBO # 276000
Tory A. Weigand, BBO #548553
MORRISON MAHONEY LLP
250 Summer Street
Boston, MA 02210
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and

I hereby certify that this document(s) filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF) and paper copies will be sent to those indicated as non registered participants on October 27, 2006

/s/ Peter C. Knight

William L. Oliver, Jr. Esquire
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Defendants.)

**EXHIBITS TO DEFENDANTS' MEMORANDUM
IN SUPPORT OF THEIR MOTION FOR SUMMARY JUDGMENT**

1.	NTSB Aircraft Maintenance and Records Group Factual Report dated March 16, 2004
2.	Fred Leonelli Deposition taken in <i>Dean v. Raytheon Aircraft Company</i>
3.	James Desmond Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
4.	Dominick Battaglia Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
5.	Thomas Jeffrey Vallejo Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
6.	Daniel Kinan Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
7.	Scott Servis Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
8.	NTSB Report dated December 29, 2003
9.	Dwight Law Colgan Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
10.	John Goglia Deposition taken in <i>Dean v. Raytheon Aircraft Company</i>
11.	Michael Maddox Deposition taken in <i>Dean v. Raytheon Aircraft Company</i>
12.	Donald Sommer's Expert Report submitted for the plaintiffs
13.	Peter Sarluca Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
14.	Affidavit of Willard Crowe
15.	Larry Ratliff Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
16.	Miguel Rodriguez Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
17.	REPS, 27-30-04
18.	NTSB Factual Report (RAC000204 – 218)
19.	Colgan's Responses to Requests for Admissions, No. 20, submitted in the <i>Colgan Air v. Raytheon Aircraft Company</i> Case
20.	Colgan's General Maintenance Manual

21.	REPS 27-30-05
22.	REPS 27-30-09
23.	Fred Leonelli Deposition taken in <i>Colgan Air v. Raytheon Aircraft Company</i>
24.	Colgan's First Flight of the Day Checklist
25.	NTSB Group Chairman's Factual Report, Cockpit Voice Recorder (RAC000373 – 408)
26.	Richard Nelson's expert report submitted in <i>Dean v. Raytheon Aircraft Company</i>
27.	NTSB's Probable Cause Report
28.	Lisa Weiler Deposition taken in <i>Dean v. Raytheon Aircraft Company</i>
29.	Wayne W Wallace Affidavit

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 1

NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF AVIATION SAFETY
WASHINGTON, D.C. 20594

March 16, 2004

Aircraft Maintenance and Records Group Factual Report

NYC03MA183

A: ACCIDENT

Location: Yarmouth, Massachusetts
Date: August 26, 2003
Time: 1529 Eastern Standard Time
Aircraft: Colgan Air, Flight 9446, Beech 1900D, N240CJ

B: AIRCRAFT MAINTENANCE AND RECORDS GROUP

Group Chairman: Stephen M. Carbone
National Transportation Safety Board
Washington, D.C.
Member: Eric West
Federal Aviation Administration
Washington, D.C.
Member: Robert Moorhead
Colgan Air Inc.
Manassas, Virginia

C: SUMMARY

On August 26, 2003, at 1540 eastern daylight time, a Beech 1900D, N240CJ, operated by Colgan Air Inc. as flight 9446 (d.b.a. US Airways Express), was substantially damaged when it impacted water near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts; destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan was filed for the repositioning flight conducted under 14 CFR Part 91.

RAC 000409

On August 27, 2003, the Aircraft Maintenance and Records Group convened at the Colgan Air maintenance facility in Barnstable, Massachusetts, to interview maintenance personnel who worked on the tab actuators and trim tab control system of the accident airplane. On August 28, 2003, the Aircraft Maintenance and Records Group met at the Colgan Air corporate office in Manassas, Virginia, to examine the Colgan Air maintenance program and the airplane records of N240CJ. This facility houses the Maintenance Control, Training, and company officers for Colgan Air. The Aircraft Maintenance and Records Group completed the examination of the records on August 29, 2003.

The Aircraft Maintenance and Records Group Chairman performed a review of airworthiness directives, maintenance programs, weight and balance, supplemental type certificates, maintenance discrepancies, service difficulty reports, and contracts.

All interviews are attached to Appendix A of this report.

D: **DETAILS OF INVESTIGATION**

1.0 **Aircraft History**

Per Federal Aviation Administration (FAA), Civil Aviation Registration records, the Raytheon Aircraft Company sold the accident aircraft, serial number UE-40, to Champlain Enterprises, Inc, operating as CommutAir on March 29, 1993.

On October 10, 2000, the aircraft was sold back to Raytheon Aircraft. For twenty-eight months the aircraft was kept at the Raytheon Aircraft facility in Wichita, Kansas awaiting sale.

The aircraft was leased to Colgan Air, Incorporated (Colgan Air) by Raytheon Aircraft Credit Association of Wichita, Kansas, on January 3, 2003 for a period of 84 months, through a lease contract. The aircraft entered service for Colgan Air on January 4, 2003 with the registration number, N240CJ.

1.1 **Aircraft Summary**

FAA Registration Number:	N240CJ
Manufacturer Serial Number:	UE-40
Manufacturer Line Number:	40
Original Delivery Date:	March 29, 1993

Total Hours at Time of Accident: 16,503.5 hours
 1,219.1 hours generated by Colgan.

Total Cycles at Time of Accident: 24,637 cycles
 1,765 cycles generated by Colgan.

2.0 Aircraft Maintenance

2.1 Maintenance Summary Program - Raytheon BE 1900D

As per the Colgan Air Maintenance Program Manual (MPM), Colgan Air has a Continuous Airworthiness Maintenance Program (CAMP). The CAMP is broken down into a series of checks and inspections, which incorporates guidance from the Beech 1900D Airliner Maintenance Manual. As stated in the Colgan Air General Maintenance Manual, Volume Ten, Colgan Air is responsible for revising the MPM and CAMP.

Colgan Air utilizes a Continuing Analysis and Surveillance Program (CASP) as per Federal Aviation Regulation (FAR) 121.373. This program requires Colgan Air to examine the maintenance and inspection program.

The various inspections performed on the aircraft in the Colgan fleet are: Preflight Inspections, Routine Inspections, Detail Inspections, and Structural Inspections.

The Preflight Inspection is accomplished every four (4) flight-days. The inspection is performed according to workcard #05-20-07.

The Routine Inspection is accomplished every eight (8) flight-days. The inspections are conducted per workcard #05-20-00. Routine Inspections are performed in conjunction with the Detail Inspections.

The Detail inspections are broken down into six different phases. Subsequent phases are accomplished every 220 flight-hours. The completion of Detail One through Six is one full cycle. Only a subset of the aircraft's components is inspected each phase, resulting in the complete aircraft being inspected within the 1320 flight-hour cycle. The following is a list of specific major component areas covered under each phase:

First	Workcard #05-20-01	Wings
Second	Workcard #05-20-02	Powerplant and Nacelles
Third	Workcard #05-20-03	Flight Compartment/Cabin
Fourth	Workcard #05-20-04	Environmental Systems/Nose
Fifth	Workcard #05-20-05	Landing Gear
Sixth	Workcard #05-20-06	Aft Fuselage/Empennage

The checks and inspection times can be exceeded by the use of an Extension Authorization form. Preflight inspections can be extended by one flight day, Routine checks can be extended by two flight days, and Detail checks can be extended by 10% of the inspection interval.

Breakdown of Colgan Air's Maintenance Program (attachment 1):

<u>Preflight Inspection:</u>	Every four (4) Flight-Days
<u>Routine Inspection:</u>	Every eight (8) Flight-Days and with Detail Check
<u>Detail Check:</u>	Every 220 Flight-Hours
<u>Structural Check:</u>	As set forth by the manufacturer
<u>Engine Program:</u>	Continuous Airworthiness Maintenance Program.

Each inspection phase of the Detail Inspection also includes General Service Items and Operational Inspection Procedures that require functions necessary to guarantee the aircraft's continued airworthiness.

Structural inspections are performed in accordance with guidelines set down by the manufacturer (attachment 2). The inspection schedule is:

A Check:	12,000 flight-hours
B Check:	15,000 flight-hours
C Check:	18,000 flight-hours
D Check:	17,500 flight-hours
E Check:	20,500 flight-hours
F Check:	24,000 flight-hours
G Check:	30,000 flight-hours

The previous checks for aircraft N240CJ were accomplished as follows:

Preflight Inspection:	August 23, 2003 Flight Hours: 16,499.1 Cycles: 24,627
Routine Inspection:	August 24, 2003 Flight Hours: 16,503.5 Cycles: 24,637
Detail Inspection:	
Check 6:	August 24, 2003 Flight Hours: 16,503.5 Cycles: 24,637
Check 5:	July 15, 2003 Flight Hours: 16,287.8 Cycles: 24,340
Check 4:	June 6, 2003 Flight Hours: 16,079.5 Cycles: 24,052
Check 3:	April 29, 2003 Flight Hours: 15,889.1 Cycles: 23,773
Check 2:	March 18, 2003 Flight Hours: 15,653.1 Cycles: 23,476
Check 1:	February 6, 2003 Flight Hours: 15,470.5 Cycles: 23,142
Structural Check:	March 22, 2003 Flight Hours: 15,706 Cycles: 23,493

2.2 Weights and Balance Summary

An aircraft weigh is done every three years or when the aircraft is repainted. The aircraft was last weighed December 17, 2002 in Bethany, Oklahoma (attachment 3).

Empty Weight	10,300 pounds
Empty Weight Arm	282.1 inches
Basic Empty Weight	10,370 pounds
Basic Empty Weight Arm	282.3 inches
Basic Empty Weight Moment	2,927,460.4 inch-pounds

A Revised Weight and Balance sheet was filed for installation of the Digital Flight Data Recorder Upgrade Kit on December 20, 2002, in Bethany, Oklahoma.

New Weight added	6.7 lbs. at 282.3 inches
New Basic Empty Weight	10,376.7 pounds
New Basic Empty Weight Arm	282.3 inches
New Basic Empty Weight Moment	2,930,240.9 inch-pounds

2.3 Engines: PT6A-67D

SECTION	SERIAL NUMBER	INSPECTION/ OVERHAUL FREQUENCY (HOURS)	LIMIT (CYCLES)	HOURS at LAST OVERHAUL/ INSPECTION	CYCLES at LAST OVERHAUL/ INSPECTION	DATE of LAST OVERHAUL/ INSPECTION
#1 GAS GENERATOR OVERHAUL	114052	8000	N/A	12125.5	19726	10.25.00
#2 GAS GENERATOR OVERHAUL	114111	8000	N/A	14942.2	21731	10.30.00
#1 HOT SECTION INSPECTION	N/A	4000	N/A	14007.9	21889	N/A
#2 HOT SECTION INSPECTION	N/A	4000	N/A	14942.2	21731	N/A
#1 POWER SECTION OVERHAUL	114052	8000	N/A	12287.6	19947	10.25.00
#2 POWER SECTION OVERHAUL	114111	8000	N/A	14942.2	21731	10.30.00

At the time of the accident:

#1 Engine Part Number: P&W PT6A-67D Serial Number: PCE-114052

GAS GENERATOR:	Hours: 15,245.5	Cycles: 23,662
POWER SECTION:	Hours: 15,407.6	Cycles: 23,883

#2 Engine Part Number: P&W PT6A-67D Serial Number: PCE-114111

GAS GENERATOR:	Hours: 15,245.5	Cycles: 23,662
POWER SECTION:	Hours: 15,407.6	Cycles: 23,883

2.4 Engine Monitoring System

Per the Colgan Air MPM, the engines are part of the Engine Continuous Airworthiness Maintenance Program (CAMP) (attachment 4). The CAMP is based on the life cycle limits of the rotating components. Pratt and Whitney Canada Service Bulletins and engine teardown data determine these limits. The CAMP consists of fixed hour and cycle limits at which the Power Section and Gas Generator Modules will be overhauled. These overhauls are performed at the Pratt and Whitney Canada Overhaul Service Center or at a Pratt and Whitney Canada PT6A-67D authorized Certified Repair Station.

2.5 Propellers

At the time of the accident:

1 Propeller: Part Number: HC-E4A-3I Serial Number: HJ-123A

Time Since New:	9871.0 hours
Time Since Major Overhaul:	2483.5 hours

#2 Propeller: Part Number: HC-E4A-3F Serial Number: HJ-88A

Time Since New:	15,906.4 hours
Time Since Major Overhaul:	109.8 hours

Per the Colgan Air MPM, the propellers are maintained under an approved Colgan Air CAMP program. The program provides guidelines for maintenance items and requirements to inspect, service, and replace life limited components. Overhauls are performed in accordance with the Hartzell 143 Overhaul Manual.

2.6 Aircraft Status

2.6.1 Minimum Equipment List (MEL)

Per Colgan Air records, there was one open MEL item at the time of the accident: *Flight Data Recorder Inoperative (Elevator Trim Tab Parameter)*. An "A" category item due to be repaired by August 29, 2003.

2.6.2 Aircraft Condition Report

Per the records supplied by Colgan, the Aircraft Condition Reports were reviewed. No open items were found.

2.6.3 Supplemental Type Certificates

Supplemental Type Certificates¹ (STC), supplied by Colgan were reviewed. One Supplemental Type Certificate, #SA00968NY, was recently issued. This STC authorized the installation of a Flight Data Recorder and sensors.

2.6.4 Airworthiness Directive (AD) Summary and Service Bulletins (SB)

Colgan Air provided AD and SB summaries, which were reviewed. All listed Airworthiness Directives and Service Bulletins have been complied with.

Four AD/SB items are of note:

AD 2002-23-11: Prevent Balance Weight Attachment Screws from Becoming Loose, Which Could Restrict Elevator Movement. The item was complied with as a Service Bulletin #27-3187R1 on December 19, 2002. No defects were noted (attachment 5).

AD 99-09-15: Flight Controls – Inspection for Control Column Interference with Wiring Behind the Instrument Panel. This was accomplished on July 6, 1999 (attachment 6).

AD 2003-09-12: Replacement of Missing Rivets. This AD was not accomplished, but required accomplishment by June 27, 2004 or 1200 hours time-in service from June 27, 2003. The accident aircraft never reached these two compliance points.

AD 2003-04-26: Inspection of AC Inverter and Modification of Inverter and Inverter Wire Shield. This AD was not accomplished, but required accomplishment by October 21, 2003. The aircraft never reached the compliance date.

¹ The FAA issues Supplemental Type Certificates. They authorize a major change or alteration to an aircraft, engine, or component that has been built under an approved Type Certificate.

Emergency AD 2003-03-18: Elevator Rig Check. This Emergency AD was accomplished as part of a Fleet Campaign Directive (FCD) #1900-27-03-01 revision one, on January 31, 2003. *AD 2003-03-18: Elevator Rig Check.* A follow-up AD was accomplished on February 2, 2003 as part of FCD #1900-27-03-02.

2.6.5 Prior Related Discrepancies Involving N240CJ

August 25, 2003 – Right Tab Actuator replaced and Forward Trim Cable replaced.

August 24, 2003 – Left and Right Tab Actuators replaced.

July 9, 2003 – Removed and replaced Elevator Trim Tab Servo.

April 29, 2003 – Pitch Trim Chain re-tightened due to excessive slack.

2.6.6 Logbook Forms

The maintenance paperwork from January 2003 through August 2003 was reviewed for discrepancies specifically related to elevator or pitch control. No trends or discrepancies were noted.

2.6.7 Service Difficulty Reports²

The FAA Service Difficulty Reports were reviewed for the accident aircraft. No flight control maintenance trends or discrepancies were noted.

2.6.8 Major Repairs and Alterations

A review of the records for Colgan Air revealed one Major Repair on June 2, 1999. The previous owner, Champlain Enterprises, recorded this repair on a FAA Form 337³:

"Replaced damaged left Horizontal Stabilizer structural parts with new manufacturer supplied items duplicating original installation." The parts were used to repair the leading edge of the left horizontal stabilizer. Work was performed per the Structural Repair Manual 114-590021-9B7.

² A Service Difficulty Report (SDR) is a report of the occurrence or detection of each failure, malfunction, or defect as required by 14 CFR 121.703 and 121.704.

³ A FAA Form 337 is used to record and document a major repair or a major alteration to an airframe, powerplant, propeller, or appliance. Block three of this form is used by an FAA Aviation Safety Inspector to approve data for a major repair or major alteration.

3.0 Colgan Air Incorporated

The Colgan Air Director of Quality Assurance stated that the carrier operates as a Part 121 Operator, a domestic air carrier operator, operating under certificate number NSVA 519S. Colgan Air operates nine Saab 340B aircraft and fifteen BE1900 aircraft. The BE1900 aircraft are divided into five "C" and ten "D" models. Colgan Air maintains a contract with US Airways to supply regional airline support. The aircraft are flown under the US Airways Express livery through line maintenance facility destinations in Connecticut, Maine, Massachusetts, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia.

The Colgan Air General Maintenance Manual (GMM) states that Colgan Air operates three base maintenance facilities: Albany, New York; Hyannis, Massachusetts; and Manassas, Virginia. There is one Main Base Maintenance Facility⁴, located in Manassas, Virginia in the Broad Run airport (HEF). The Manassas station is strictly fly-in scheduled maintenance and houses the home office.

By the GMM, Albany (ALB) and Hyannis (HYA) are considered Sub Base Maintenance Facilities⁵. ALB and HYA are also utilized as passenger destination cities, where the scheduled maintenance can be performed and passenger service is available.

Colgan Air employs its own maintenance technicians (MTS) that perform all the necessary scheduled and phase maintenance on its fleets. The training for these MTS is accomplished with both On the Job Training (OJT) and classroom familiarization training. The OJT tasks are compiled by aircraft model and broken down by Air Transport Association (ATA) chapter and sub-chapter. The classroom training for the 1900D is broken out into two phases: Phase One and Phase Two, each consisting of aircraft specific instruction.

⁴ The Colgan Air GMM describes a Main Base Maintenance Facility: "adequate facilities support and personnel are available to accomplish major repairs and all scheduled and unscheduled maintenance and inspections. Alterations may be performed on aircraft and related equipment, within the limits of the facility".

⁵ The Colgan Air GMM describes a Sub Base Maintenance Facility: "adequate facilities support and personnel are available to accomplish the work assigned by the Director of Maintenance. This work may include major repairs, all scheduled and unscheduled maintenance and inspections and alterations of aircraft and related equipment, within the limits of the facility".

Line Maintenance Facilities⁶, or line stations, provide unscheduled maintenance support and the dispatch of revenue aircraft. Several line stations for Colgan Air utilize contract maintenance personnel for support. Contract maintenance communicates to Colgan Air through the Maintenance Control department for assignments, necessary paperwork, and/or instructions.

3.1 Hyannis Maintenance Facility

The Colgan Air GMM shows the HYA sub base maintenance facility is located at the Barnstable airport in Hyannis, Massachusetts. Phase (Detail) checks, Routine checks, and scheduled maintenance are accomplished in HYA as part of the Colgan Air maintenance program. The hangar has the equipment, parts, manpower, and tools to support the various scheduled maintenance performed there.

HYA is provided with one Quality Assurance (QA) inspector, 16 maintenance technicians (MTS), and three lead technicians/delegated QA inspectors (DQI) to perform the scheduled maintenance assigned to the station. Two maintenance supervisors are on-site to oversee the station and its operation.

The Director of Quality Control for Colgan Air stated that MTS and lead technicians (leads) are scheduled between three different shifts: one daytime shift, one afternoon shift and one nighttime shift. Each shift is covered seven days per week. The employees on the day and afternoon shifts work an eight-hour per day shift with five days on and two days off. The nighttime shift employees work a ten-hour per day shift with four days on and three days off. The supervisors work shifts that allow contact with all three shifts during the workweek.

The QA Inspector works an eight-hour per day shift for five days per week on a late evening shift and is supported by the three DQI inspectors. The DQI assumes the inspection duties for the QA inspector on his days off.

⁶ The Colgan Air GMM describes a Line Maintenance Facility: "adequate facilities support and personnel are available to accomplish the work assigned by the Director of Maintenance. This work may include scheduled and unscheduled maintenance, inspections, checks, repairs, alterations, and adjustments in accordance with the directions of Colgan Air, Inc. procedures in this manual".

4.0 Training

According to information provided by the Director of Quality Control (DQC) for Colgan Air, their training program is maintained in compliance with FAR 121.375. The Vice President of Maintenance (VPM) has the ultimate responsibility for training. The DQC reports to the VPM for all aspects of required training. The oversight of the DQC includes: assuring that training records are properly recorded, development of training and testing programs, and assuring that OJT is recorded in a timely manner.

As per the VPM, prior to and following the accident, a Maintenance Instructor (MI) was employed for maintenance training. His duties included training records documentation along with a Maintenance Administrative Assistant (MAA). The MAA was also responsible for training records documentation. In July 2003 the then current instructor left the company, a replacement was actively looked for. During the period when a full time instructor was not employed the DQC maintained personal oversight of the training program. Colgan found and hired a replacement instructor in early September 2003.

The DQC stated that Indoctrination training precedes an employee's start date and consists of Ground Handling and Airworthiness Release training. The employee is given a 16-hour introduction course on Colgan Air's paperwork, policies, safety, and procedures. The employee is required to demonstrate their knowledge with oral testing and a workbook. The MI conducts the indoctrination training at the HEF facility and re-qualifies the maintenance technician annually.

The aircraft systems training for the A&P mechanics, manager, leads, and QA Inspectors is accomplished through both formal systems training and OJT. Formal, or familiarization (FAM), training for the fleet is provided by the MI. FAM training for each aircraft is divided into two phases: Phase One and Phase Two.

According to the DQC, Phase One training is an eight-hour class that is predominantly classroom training. Some time is spent visiting an aircraft for hands-on familiarization. The MI provides instruction for the course, which is conducted at HEF. The course consists of the basic introduction and aircraft familiarization training. Differences between the BE1900 C and D are taught, to make the technician aware of physical dissimilarities between the two aircraft.

As attested to by the DQC, Phase Two is a 40-hour classroom-training course combined with hands-on instruction at the aircraft. The MI teaches the lessons, which is comprised of Systems training for each applicable Air Transport Association⁷ (ATA) chapter. The course is designed to expand upon the lessons taught in Phase One, with differences training for the BE1900 C and D models.

⁷ The Air Transport Association (ATA) has separated the various systems, structures, powerplant, and propeller components into numbered ATA chapters to simplify the referencing of aircraft parts, repairs, modifications, and inspections.

Previously trained MTS and/or lead, acting as instructors, provide OJT training to untrained technicians. This form of training is strictly hands-on using the manual as the guideline and controlled on the shop floor by the Lead technician. Each technician is provided with a workbook for each aircraft type.

The workbook's pages are divided in order by ATA chapter, sub-chapter, and task (attachment 7). As the technician completes a task, the instructor signs the technician off and a copy is made for the technician's training records. The technician's supervisor is responsible for assuring the records for each technician is current.

The DQC stated that Colgan Air maintains a computerized tracking system for training. Annual indoctrination and other required re-qualification training are followed by the computer. The technician's supervisor is alerted to necessary training for his reporting MTS. The MI oversees the computer tracking to assure it is complied with. A review of the MTS training records shows that the mechanics involved in this job had the proper training as defined by the FAA accepted Colgan Air Manual System.

5.0 Maintenance Performed

5.1 Detail Six

According to Colgan Air's maintenance records, on August 23, 2003, aircraft N240CJ underwent a Detail Six (D6) phase check (attachment 8) as part of its approved phase maintenance program using guidance from the Beech 1900D Airliner Maintenance Manual. The D6 check was performed at the Hyannis, Massachusetts (HYA) station beginning on August 23 at 1647⁸.

The MPM states that the emphasis of the D6 check is on the empennage and aft fuselage, which includes visual inspections, lubrications, free play checks, engine borescopes, engine mount torque checks, servicing, operational checks, and cable tension checks.

The check was interrupted mid-stream (procedures for interrupting checks are contained in the GMM section 3.5.3) and the remaining work was deferred on August 24, 2003 at 0800. Ten revenue flight legs were conducted on Sunday August 24, and the D6 check was continued that night at 2030. The check was completed on Tuesday August 26, 2003 at 1100.

⁸ 1647 – all times reported are in local military hours.

5.2 Unscheduled Maintenance

According to Colgan Air's maintenance records, on August 24, the maintenance technicians (MTS) performed workcard # 27-30-01 (attachment 9) as part of the D6 work package. Section two of this workcard requires a free play check of the elevator trim tab actuators. The MTS accomplished the 19 steps for this check and found both left and right elevator trim tab (ETT) actuators to have failed the check. Failure of the actuators by this check requires replacement before further flight. Two actuators were ordered and four MTS were assigned - two to each actuator - to replace them.

As per the BE1900D maintenance manual, replacement of the ETT Actuators requires accomplishment of all the manual procedures per the BE1900D maintenance manual (MM), 27-30-06 (attachment 10). Interviews were conducted with: a maintenance technician, who replaced the left actuator the first day and the right actuator the second day; the lead technician (LT) on duty; and the Quality Assurance (QA) inspector who performed the required item inspection (RII). Per the interviews, the maintenance manual procedures were followed.

According to the interviews, the MTS chose to omit step (c) of the *Elevator Trim Tab Actuator Removal* and step (i) of the *Elevator Trim Tab Actuator Installation*. Omission of these steps discounts nineteen maintenance steps required by the manufacturer's MM in the process of accomplishing the ETT actuator replacements. These steps guide the maintenance technician through the removal and installation of the elevator control surface(s) and are the MM procedures 27-30-02 (attachment 11).

As per interviews with the maintenance technician who replaced the actuators, the ETT system cables were not blocked⁹ during the actuator replacements. According to MM 27-30-06, blocking is not a required step within the maintenance procedures. Blocking of cables is not referenced in Chapter 7 of Advisory Circular 43.13-1B as part of recommended best practices.

According to the interviews with the maintenance technician, the two ETT actuators were replaced and an operational check was conducted. In the process of performing operational checks, the ETT cable system seized. The maintenance technician took the pedestal panels loose to ascertain the problem with the cable system. The maintenance technician documented that the "Elevator trim tab cable fell off drum under pedestal" on Maintenance Work Order # 08477.

⁹ Blocking is a practice, not a standard that maintains minimum pressure on a cable system. The pressure prevents the cables from coming off the system's pulleys and/or drums due to excessive slack. Blocking is accomplished in different ways and through several methods. Cable blocking, by assuring proper tension on the cable during maintenance, secures the integrity of the cable routing.

The maintenance technician discovered that the ETT forward cable became kinked¹⁰ and ordered out a replacement cable. The necessary floorboards and access panels were opened to gain entry to the forward cable. The LT stated during an interview that management at Colgan Air had been in discussion with Raytheon Aircraft to determine if the part number of the right hand (R/H) ETT actuator was correct. It was found that the part number was incorrect and the R/H ETT actuator had to be replaced. This part was also ordered out under the correct part number.

The ETT actuator and forward cable were delivered to the hangar the following afternoon, August 25, 2003. That night two MTS were assigned to replace the recently installed R/H ETT actuator and two MTS were assigned the ETT forward cable change. The forward cable was replaced per MM 27-30-04 (attachment 12), while the R/H ETT actuator was replaced per MM 27-30-06. The steps (c) and (i), removal and installation of the right elevator, were omitted.

As per interviews with the two MTS that performed the forward cable replacement, the drum assembly was removed in the cockpit during the dayshift, prior to their assignment to the forward cable change. The turnover from day shift to night shift did not contain written turnover notes of explicit work performed. Non-routine discrepancies on the Detail check were open that indicated that work was not complete.

Per interviews, the two MTS did not use a lead wire¹¹ when routing the cable through the forward cable pulley system. Attaching lead lines as part of the cable replacement is addressed in MM 27-30-04. Step (g) states, "attach lead lines to the aft ends of the forward cables and properly identify them to facilitate reinstallation." One of the maintenance technicians marked the topmost cable pulleys with a letter "T" to facilitate re-assembly. Following the re-assembly both MTS checked the routing of the forward cable by referring to MM 27-30-04, figure 201.

The BE1900D maintenance manual does not contain an Elevator Trim System Operational check. The MTS stated that testing of the system was based on what they determined to be proper tests for properly testing the system components.

¹⁰ Kinked – the cable in this instance became caught between the forward drum and structure. When the cable was moved between the drum and structure, it became damaged and an imperfection was introduced into the cable, weakening the integrity of the cable.

¹¹ Lead wires are used to assure the proper routing of cables and electrical wiring when being removed during maintenance. A thin wire or string is attached to the cable and "follows" the cable as it is pulled out of the pulley system (electrical wire out of the conduit). The lead wire becomes a visual guide for the removed cable's route and is attached to the replacement cable. It is then pulled back through the system to assure the replacement is properly routed back.

According to interviews with the QA inspector and the LT, the ETT system was re-checked following the cable replacement performed. The system had been run full up and down travel several times, both electrically and manually. The QA inspector performed the RII function and was present at both the tail and the cockpit pedestal during all phases of the operational checks. The QA inspector was satisfied with the performance of the ETT cable system and the two ETT actuators and complied with the RII functions of the job.

During interviews, the two MTS working the forward ETT cable stated there was no confusion in the handling of the cable drum or how the manual illustration was interpreted. The MTS admitted to winding the cable and installing the drum to agree with the depiction in the manual. They further stated that the job went normally and that the operational checks were good.

At the conclusion of the ETT system work, the D6 check was closed and the aircraft released for service on August 26th at 1100. After work on the ETT system, the AMM requires that a null check be performed on the Elevator Trim Tab sensor that provides data to the Flight Data Recorder (FDR) after cable rigging and tensioning. Because of time and the lack of availability of the vendor, who has the equipment and specialists to accomplish this task, the ETT parameter was deferred in the Aircraft Maintenance Logbook prior to flight in accordance with the Minimum Equipment List (MEL) 31-3, control number 8173.

Stephen Carbone
Aircraft Maintenance and Records Group Chairman

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 2

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Page 1

1 UNITED STATES DISTRICT COURT
2 FOR THE DISTRICT OF MASSACHUSETTS3 YISEL DEAN, et al.,
4 Plaintiffs,
5 vs.

6 Case No. 05 CV 10155 PBS

7 RAYTHEON COMPANY, a Delaware
8 corporation, RAYTHEON AIRCRAFT
9 HOLDINGS, INC., a Delaware
10 Corporation, RAYTHEON AIRCRAFT
11 COMPANY, a Kansas Corporation,
12 RAYTHEON AIRCRAFT CREDIT
13 CORPORATION, a Kansas Corporation,
14 Defendants.15 LISA A. WEILER, et al.
16 Plaintiffs,17 vs. Case No. 05 CV 10364 PBS
18 RAYTHEON COMPANY, a Delaware
19 corporation, RAYTHEON AIRCRAFT
20 HOLDINGS, INC., a Delaware
21 Corporation, RAYTHEON AIRCRAFT
22 COMPANY, a Kansas Corporation,
23 RAYTHEON AIRCRAFT CREDIT
24 CORPORATION, a Kansas Corporation,
25 Defendants.26 DEPOSITION OF: FREDERICK J. LEONELLI
27 DATE: October 3, 2006
28 TIME: 8:51 a.m.
29 LOCATION: A. William Roberts, Jr. & Associates
30 6047 Tyvola Glen Circle
31 Charlotte, North Carolina
32 TAKEN BY: Counsel for the Defendants
33 REPORTED BY: CINDY A. HAYDEN, RMR, CRR

34 A. WILLIAM ROBERTS, JR., & ASSOCIATES

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36 (843) 722-8414 (803) 731-5224

37 Myrtle Beach, SC

38 (843) 839-3376

39 Greenville, SC Charlotte, NC

40 (864) 234-7030 (704) 573-3919

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1 Q. So you have two?
 2 A. Yeah. Yeah. I have both.
 3 Q. Is that it?
 4 A. Yes.
 5 Q. What about Colgan's CAMP, did you
 6 review that?
 7 A. Maintenance program? No.
 8 Q. What's a CASS, C-A-S-S?
 9 A. That's a requirement under the Part 121
 10 that requires -- is a continuing analysis
 11 surveillance system.
 12 Q. Okay. What's that about?
 13 A. Well, under Part 121, every airline,
 14 121 operator, and also scheduled 135 operators have
 15 to have a continuing analysis and surveillance
 16 system. That system is an internal -- it has two
 17 functions, provides internal auditing and analysis.
 18 It's supposed to -- the system's supposed to be
 19 established to set up and be able to measure the
 20 performance and effectiveness of the maintenance
 21 program -- maintenance and inspection program.
 22 Q. Is it a method for improving systems in
 23 place?
 24 A. It's a quality assurance system that's
 25 there for the two purposes, to detect problems and

1 also, through analysis, implement or recommend
 2 improvements in different procedures.
 3 Q. So, to detect problems in place in the
 4 operation itself?
 5 MS. SCHIAVO: Object to the form. It's
 6 beyond the scope of the testimony in what he was
 7 called to testify about. But you can go ahead.
 8 THE WITNESS: Okay.
 9 A. It's in -- in relationship to
 10 maintenance departments. So, for instance, I would
 11 do an internal audit of my quality control
 12 organization to make sure that they are doing --
 13 they're posting their technical manuals when
 14 required. They get the revisions and they're
 15 properly posted. The organization, the CASS
 16 organization, would be the people that go and do
 17 internal audits. They also do monitoring of any
 18 contracted facilities that the company uses.
 19 Q. So the CASS program people, as you say,
 20 are they typically within the operator or are they
 21 FAA or government people?
 22 A. They are within the operator.
 23 Q. Okay. So under a CASS, the operator
 24 sets up a group that will monitor the operations of
 25 the company itself, right?

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1 Q. And when you say higher levels, are you
 2 talking about 121 operators?
 3 A. Yes.
 4 Q. Which are airline-type carriers, right?
 5 A. Yes.
 6 Q. And then you said also some 135
 7 operators?
 8 A. Yeah. You have the ones that are still
 9 between the 121 and the 135 air taxi. Those, if
 10 they are in air transportation -- scheduled air
 11 transportation and still considered 135, they have
 12 to have a CASS system also. Air taxis, the charter
 13 operators, things like that, under 135 do not have
 14 to have that.
 15 Q. When did the CASS system come into
 16 place?
 17 A. 1963.
 18 Q. So it was there when you were with the
 19 FA?
 20 A. Before, yeah.
 21 Q. Did you have any dealings with it when
 22 you worked with the FA?
 23 A. Well, my organization, the one I
 24 left -- the one I retired out of was the
 25 organization that developed regulations, policies,

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1 pedestal tab control drum to the right-hand threads
 2 cable of the actuator drum.
 3 Q. So the left-hand threads are to come
 4 off the forward side of the cable --
 5 MS. SCHIAVO: Objection.
 6 BY MR. JONES:
 7 Q. -- following that forward as-installed
 8 arrow, correct?
 9 MS. SCHIAVO: Object to the form. Go
 10 ahead.
 11 A. According to this picture --
 12 Q. Okay.
 13 A. -- this illustration, yeah.
 14 Q. All right. So once that -- once this
 15 gets installed with the cables wrapped backwards,
 16 the right-hand threads are, in fact, coming off the
 17 front instead of the left-hand, correct?
 18 A. Yeah. Yes.
 19 Q. So you're saying that the fact that the
 20 right-hand threads coming off the front instead of
 21 the left-hand threads caused there to be a crossing
 22 downstream somewhere --
 23 A. Yes.
 24 Q. -- of these cables?
 25 A. As far as I made out, yeah.

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1 you doing --
 2 A. The tab goes up when you're nosing
 3 down.
 4 Q. When it's rigged properly?
 5 A. Yes.
 6 Q. Okay. Let's make clear we're straight
 7 on that. The relationship between --
 8 A. Okay.
 9 Q. -- tab and nose up and down when it's
 10 rigged properly.
 11 MS. SCHIAVO: Object to the form. Go
 12 ahead
 13 BY MR. JONES:
 14 Q. You roll -- you roll forward, you're
 15 wanting nose down?
 16 A. Yes.
 17 Q. What's happening to the tab when it's
 18 rigged properly?
 19 A. When it's rigged properly, it's -- the
 20 tab's up, the elevator's going down, which puts the
 21 nose down.
 22 Q. So nose down means elevator tab up?
 23 A. Right.
 24 Q. It's an opposite relationship?
 25 A. Yes.

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1 Q. Okay. Why? Why does this right-hand
 2 thread coming off the front instead of the back
 3 cause there to be a crossing downstream?
 4 MS. SCHIAVO: Object to form.
 5 A. I don't know.
 6 Q. But that's your opinion?
 7 A. Yes.
 8 Q. All right. So we've established that
 9 the system is installed in such a way that it is
 10 operating the elevator trim in reverse?
 11 A. Yes.
 12 Q. So when you take the wheel -- and you
 13 are a pilot, correct?
 14 A. Yes.
 15 Q. And you roll it forward toward the
 16 nose, what are you doing, are you giving it nose
 17 down trim or nose up trim?
 18 A. Down.
 19 MS. SCHIAVO: Object to form.
 20 BY MR. JONES:
 21 Q. I'm sorry?
 22 A. Nose down.
 23 Q. Nose down. So, when this was rigged
 24 the way it was rigged, as you roll forward, what
 25 are you doing to the tab in the back, in fact? Are

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1 Q. Okay. The mechanics know that, don't
 2 they?
 3 MS. SCHIAVO: Object to the form.
 4 A. I would think they know that.
 5 Q. Well, they're A&P licensed mechanics.
 6 They're taught that, aren't they?
 7 MS. SCHIAVO: Object to the form.
 8 A. Somewhere in their backward, yes.
 9 Q. So they ought to know that--
 10 MS. SCHIAVO: Object to the form.
 11 BY JONES:
 12 Q. -- is that -- is that correct?
 13 A. If they do it enough -- I mean, you
 14 know, if you don't do it enough, it's a
 15 confusing -- it's a confusing thing, I mean.
 16 Q. But they're taught that in A&P school,
 17 aren't they?
 18 MS. SCHIAVO: Object to form.
 19 A. I was taught in A&P school 40 years
 20 ago. I don't know if I remember it from there or
 21 if I remember it from work.
 22 Q. Well, they're tested on that, aren't
 23 they?
 24 A. I don't know. Then we've got to go
 25 look at the 147 which we --

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1 Q. Have you ever been a DME, a designated
 2 maintenance inspector?
 3 A. No. Examiner, no.
 4 Q. That's right. I'm sorry.
 5 A. Well, actually, I was. When I was an
 6 FA inspector, I was an examiner. I could issue the
 7 same licenses as the DMEs do.
 8 Q. Well, can we agree, though, that
 9 aircraft mechanics are taught to know the
 10 relationship between tab movement on a trim tab for
 11 the elevator and nose up or nose down?
 12 MS. SCHIAVO: Objection for the record.
 13 Go ahead.
 14 A. It's in the curriculum. They're taught
 15 the basic fundamentals of the flight controls.
 16 Q. All right. So when this trim system
 17 was tabbed so it operated backward and you roll the
 18 wheel forward, what's happening with the tab?
 19 A. It's going down.
 20 Q. Which is the wrong way?
 21 A. Yes.
 22 Q. Do you know how the electric trim works
 23 in this aircraft?
 24 MS. SCHIAVO: Object to the form.
 25 A. I don't -- I don't understand that

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1 question.
 2 Q. Are you aware that the electric trim is
 3 operated by a Servo motor in the tail that has a
 4 bridle clamp on the cables and pulls -- pulls them
 5 back and forth?
 6 A. Okay, yeah.
 7 Q. Did you know that?
 8 A. I know it's a basic-type system.
 9 Q. Do you know when you operate the
 10 electric trim in the -- in the cockpit, when the
 11 system was rigged the way this was, backward, which
 12 way is the manual wheel going to go if you push the
 13 thumb switch forward to go nose down?
 14 MS. SCHIAVO: Objection, for the
 15 record. You can answer.
 16 A. It's going to go opposite.
 17 Q. And, in fact, if you use the electric
 18 trim all by itself and don't touch the manual
 19 wheel, the trim will go the direction you're
 20 directing it to go, won't it?
 21 A. It's going to give you an indication
 22 that it's proper.
 23 Q. Now say that again. It's going to give
 24 you an indication it's proper; what do you mean by
 25 that?

1 A. That it's doing what it's supposed to.
 2 It's not opposite.
 3 Q. It's going to work properly?
 4 A. Right.
 5 Q. And the indication you're getting that
 6 it's working properly is it's doing what you ask it
 7 to do. In other words, the plane's flying the way
 8 you want it to fly, right?
 9 MS. SCHIAVO: Object to the form.
 10 A. That's the way the system works, yes.
 11 Q. But if you look at the manual wheel as
 12 you're operating the electric trim, you're going to
 13 see that the wheel's moving in the opposite
 14 direction than the input you're giving on the
 15 electric, correct?
 16 A. I don't know. I'd have to check that
 17 out. I mean, I don't remember what it did when I
 18 did it in the cockpit of the Colgan plane.
 19 Q. Well, you indicated that, when you did
 20 it in the cockpit, it was properly trimmed -- or
 21 properly rigged, right?
 22 A. Right. I don't remember which way the
 23 wheels were going then.
 24 Q. Well, if you push the trim switch
 25 forward to go nose down, the wheel's going to go

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1 nose down, roll forward, right --
 2 A. Yeah.
 3 Q. -- if it's rigged properly?
 4 And we just established that if it's
 5 rigged the way this one was, you go thumb forward
 6 to go nose down. The trim wheel's going to spin
 7 backwards in a nose up direction, right?
 8 A. See, that's what I don't know because I
 9 wasn't able to do that on the airplane because it
 10 was rigged properly.
 11 Q. I thought you just answered my question
 12 by acknowledging that it would go opposite?
 13 A. It's supposed to. That's what I read
 14 in the manuals. I don't know if that one did. I
 15 don't know.
 16 Q. Do you have any reason to believe that
 17 it wouldn't have gone backward?
 18 MS. SCHIAVO: Objection, asked and
 19 answered.
 20 A. Something made something go wrong.
 21 Q. Is it your belief that it moved
 22 opposite of the electric input, the manual wheel?
 23 MS. SCHIAVO: Objection, asked and
 24 answered.
 25 A. I don't know. I don't have a belief

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1 that it did or it didn't. All I know, that it was
 2 rigged opposite, based on the end result.
 3 Q. So you just don't know one way or the
 4 other whether the electric trim being thumb forward
 5 when it was rigged the way Colgan rigged it had the
 6 wheel moving nose up or nose down?
 7 A. On that airplane, no.
 8 Q. You don't know?
 9 A. I know what it should do. I don't know
 10 what it did on that airplane.
 11 Q. Okay. What should it do?
 12 A. It should go opposite.
 13 Q. Okay. So let's accept, for purposes of
 14 the rest of our discussion here, that it would have
 15 moved opposite than the electric input --
 16 A. All right. I'll accept that.
 17 Q. -- fair?
 18 All right. Let's look at 27-30-09
 19 then, which is Number 97. Where this started was
 20 your first subopinion under 1 where you first said
 21 that there was no operational trick -- operational
 22 check for the trim. We've already identified the
 23 yes, there was. It just wasn't in the table of
 24 contents, and it's 27-30-09. From there the
 25 question becomes whether the anomaly we're talking

1 happening, right?
 2 MS. SCHIAVO: Objection for the record.
 3 THE WITNESS: Okay.
 4 A. Yeah, it's a fail-safe type thing.
 5 Q. And the purpose is, you want to make
 6 sure you're meaning to activate the trim, so you
 7 better push both switches, right?
 8 A. Right.
 9 Q. That's what C's about?
 10 A. I don't know.
 11 Q. Okay.
 12 A. I mean, I take your word on that. It
 13 sounds reasonable.
 14 Q. All right. Looking at D now, it says,
 15 actuate both trim switches on the pilot's control
 16 wheel to the nose up position and note the trim
 17 wheel movement in the proper direction as well as
 18 full travel. Verify visually that the trim tab
 19 itself travels to the proper position, trim tab
 20 full down.
 21 A. Okay.
 22 Q. Did you read that?
 23 A. Yes.
 24 Q. Had the mechanics performed this check,
 25 should this anomaly have been evident to them?

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1 about here would have been discovered if 27-30-09
 2 had been performed. Okay. Are you with me?
 3 A. Um-hum. Yes.
 4 Q. Looking at 27-30-09, Exhibit 97, one of
 5 the checks here -- well, let's just go through the
 6 whole thing. It's not very long. A is putting the
 7 power to the aircraft, right?
 8 A. Correct.
 9 Q. B is just turning on the electric trim
 10 so it works, right?
 11 A. Right.
 12 Q. C, you're checking there that the half
 13 switch system is correct, right?
 14 A. Yes.
 15 Q. Describe that, if you could.
 16 MS. SCHIAVO: Objection to form. He
 17 wasn't called to testify on the procedures. But go
 18 ahead and answer, if you can. Just note the
 19 objection for the record.
 20 BY MR. JONES:
 21 Q. In other words, you have a split
 22 switch, right?
 23 A. Right.
 24 Q. And the test is, you push one of those
 25 two switches and make sure that nothing's

1 MS. SCHIAVO: Object for the record.
 2 Go ahead.
 3 A. I can't say. I don't -- I mean, it's a
 4 check that should have been done. It's a check
 5 that, depending on -- you know, the mechanic would
 6 have picked up. I don't know if they -- I don't
 7 think they had this check.
 8 Q. I'm not asking whether they had the
 9 check.
 10 A. Okay.
 11 Q. I'm starting with the premise we've
 12 already established which is that if the aircraft
 13 was rigged the way the NTSB said it was rigged,
 14 backwards, that when you give an electric input on
 15 the electric trim, the wheel moves opposite, all
 16 right?
 17 A. All right.
 18 Q. That's premise number one, and we agree
 19 on that, right?
 20 A. Yes.
 21 Q. Premise number two is that they perform
 22 this Step D which means push the electric trim
 23 forward, both switches, so that you should be
 24 going -- I'm sorry -- I got -- I stated that wrong.
 25 Nose up means pull back on the switches, right?

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1 it's moving, right?

2 A. Right.

3 MS. SCHIAVO: Objection, misstates
4 Exhibit 97.

5 BY MR. JONES:

6 Q. And when you look at the wheel to
7 realize it's moving, you know you're pulling back
8 on the thumb and it's moving forward, that exhibits
9 the anomaly, doesn't it?

10 MS. SCHIAVO: Objection for the record.

11 A. I mean, it doesn't really -- it says
12 the wheel's going to move. Which way, it doesn't
13 say.14 Q. We've already talked quite a lot about
15 whether the mechanics should know which way it
16 moves, right? And we've already established that
17 if you pull back on the electric switch the
18 mechanic should expect that the wheel's going to
19 roll back, correct? It's going to correspond?

20 A. Yeah.

21 Q. You'd expect that and you'd expect the
22 mechanic to know that, right?

23 MS. SCHIAVO: Objection for the record.

24 BY MR. JONES:

25 Q. Isn't that right?

1 A. Well, the -- I'm not even certain if
2 the same mechanic did both checks or was it two
3 different guys.4 Q. I'm not asking that. I'm just asking
5 whether you should expect the mechanic to know that
6 when you pull the thumb switch back to go nose up
7 that the wheel's going to roll back in the nose up
8 direction, if everything's right?9 MS. SCHIAVO: Objection. Are you
10 talking generally or are you talking specifically
11 when performing this step? I mean, now I'm
12 confused, so I'm going to object for the record.
13 Go ahead and answer it, if you can.

14 BY MR. JONES:

15 Q. Do you need me to restate it?

16 A. Yeah, please.

17 Q. Should the manufacturer be able to
18 expect that a licensed mechanic in the field would
19 know that when you pull the thumb switch back on
20 the electric trim that the manual trim wheel will
21 roll back in a corresponding nose up direction?

22 MS. SCHIAVO: Objection for the record.

23 A. I would think, you know, technicians
24 are trained that way, so --

25 Q. So the manufacturer should be able to

1 expect the mechanic knows that --
2 MS. SCHIAVO: Objection.
3 BY MR. JONES:
4 Q. -- right?
5 A. I would think.
6 Q. Okay. Having established that, if you
7 perform this check in 27-30-09 to verify pilot
8 override, you start by pulling the thumb switch
9 back on the co-pilot. You look to see if the
10 wheel's moving, right?
11 A. Right.
12 MS. SCHIAVO: Objection. It misstates
13 Exhibit 97. Forward motion, that's right, not
14 directional. That's right. Sorry. Now I'm
15 confused. You check -- you -- you see the wheel
16 begins moving. Okay. I'll object --
17 THE WITNESS: Right.
18 MS. SCHIAVO: -- withdraw the
19 objection.
20 BY MR. JONES:
21 Q. Okay. We have that established, you
22 pull the thumb switch back, you look to see if the
23 wheel is moving, right?
24 A. If it's moving, yes.
25 Q. You need to look at it to verify that,

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1 A. Well, the -- I'm not even certain if
2 the same mechanic did both checks or was it two
3 different guys.4 Q. I'm not asking that. I'm just asking
5 whether you should expect the mechanic to know that
6 when you pull the thumb switch back to go nose up
7 that the wheel's going to roll back in the nose up
8 direction, if everything's right?9 MS. SCHIAVO: Objection. Are you
10 talking generally or are you talking specifically
11 when performing this step? I mean, now I'm
12 confused, so I'm going to object for the record.
13 Go ahead and answer it, if you can.

14 BY MR. JONES:

15 Q. Do you need me to restate it?

16 A. Yeah, please.

17 Q. Should the manufacturer be able to
18 expect that a licensed mechanic in the field would
19 know that when you pull the thumb switch back on
20 the electric trim that the manual trim wheel will
21 roll back in a corresponding nose up direction?

22 MS. SCHIAVO: Objection for the record.

23 A. I would think, you know, technicians
24 are trained that way, so --

25 Q. So the manufacturer should be able to

1 right?
2 MS. SCHIAVO: Oh, objection for the
3 record. It doesn't say look at it. Go ahead. You
4 can answer, if you want -- I mean, if you can.
5 MR. JONES: Okay. Let's just stop for
6 a second. We've had a lot of speaking objections,
7 and please just make your objection for the record.
8 MS. SCHIAVO: Okay. I mean, it's just
9 we've been over this so many times. He's answered
10 and asked it, like, 30 times. I could just say --
11 MR. JONES: No problem.
12 MS. SCHIAVO: -- asked and answered,
13 move on.
14 MR. JONES: If that's your objection,
15 go ahead and make it, because we'll get there
16 faster.
17 MS. SCHIAVO: All right. All right.
18 BY MR. JONES:
19 Q. Okay. You're performing this step, you
20 pull the thumb switch back. You look to see if the
21 wheel's moving, right?
22 MS. SCHIAVO: Same objection for the
23 record.
24 BY MR. JONES:
25 Q. Where do you look? What do you look at

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 3

COPY

IN THE UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF VIRGINIA

ALEXANDRIA DIVISION

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COLGAN AIR, INC.,

Plaintiff, :
:

6

vs. : Civil Action

: No. 1:05 cv 213

RAYTHEON AIRCRAFT COMPANY,

Defendant. . . .

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McLean, Virginia

Friday, June 24, 2005

Videotaped deposition of JAMES DESMOND, witness,
called for examination by counsel for the defendant,
pursuant to notice, at the offices of Thomas B. Almy, Esq.,
Dombroff & Gilmore, P.C., 1676 International Drive,
Penthouse, McLean, Virginia, before Malynda D. Whiteley, a
Registered Professional Reporter and a notary public in and
for the State of Virginia, beginning at 9:21 a.m., when
were present on behalf of the respective parties:

	Page 10	Page 12
1	A No, sir.	1 you?
2	Q What did you do initially?	2 A No, sir.
3	A I went to a technical school.	3 Q Well, once you got your A and P, where did you
4	Q And did you obtain employment in that field?	4 start working?
5	A Yes, sir.	5 A My first job was with TWA in Long Island,
6	Q What was that?	6 New York.
7	A Mechanic.	7 Q This --
8	Q What type mechanical work was it?	8 A That was my firsts job.
9	A A and P mechanic.	9 Q This is in the late '60s?
10	Q Oh, you got your A and P at your technical school	10 A Oh, boy, you're really -- was it '68? About '68,
11	you mentioned?	11 around there.
12	A Correct, yes.	12 Q What did you do for them?
13	Q Okay. Where did you get your A and P school?	13 A Mechanic.
14	A East coast Aero Technical in Lexington,	14 Q And where -- where were you based?
15	Massachusetts.	15 A It was JFK.
16	Q And when was that?	16 Q How long did you work with them?
17	A 1968; '67, '68.	17 A About six months.
18	Q How long of a class or course is -- was that back	18 Q And where did you go from there?
19	then?	19 A I walked out the front door, packed up my
20	A That was a (sic) 18-month continuous course.	20 Volkswagen, and went home.
21	Q And what types of things did they teach you in A	21 Q Why did you leave?
22	and P school?	22 A Not my style of life.
	Page 11	Page 13
1	A From A to Z.	1 Q What -- what didn't you like about it?
2	Q Do they assume just zero familiarity in the	2 A I'm not a city boy.
3	aviation field?	3 Q Oh.
4	A Yes, they do. They start you from the basics	4 A And I was a country boy moving from the country
5	right on up.	5 to the city, and it was quite a cultural shock.
6	Q Do they teach you some of the federal aviation	6 Q And where was home?
7	regular regulations?	7 A Hyannis, Mass.
8	A Of course.	8 Q Okay. And what did you do when you got back to
9	Q Do they teach you how maintenance manuals work?	9 Hyannis?
10	A Yes, sir.	10 A Well, let's see. I took a job driving an oil
11	Q And they teach you that when you're dealing with	11 truck.
12	maintenance manual to complete a particular task, you're	12 Q Had you tried to get a job in the aviation
13	supposed to do each one of the items in the list; is that	13 business?
14	right?	14 A In Hyannis?
15	A Correct.	15 Q Yes.
16	Q And after you were done with that, did you have	16 A Yes, sir, I did.
17	to take a test to get your license?	17 Q Was there anything available?
18	A Yes, sir.	18 A Well, at that time I think they had three cows
19	Q And how -- have you held your A and P license	19 and a pasture there; and there -- there was -- you know, it
20	ever since then?	20 was impossible. But times change, you know.
21	A Yes, sir.	21 Q Sure.
22	Q Have you ever had any enforcement actions against	22 So how long did you drive the oil truck?

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<p>1 A Oh, off and on I think I drove it for a year, 2 year and a half, after school.</p> <p>3 Q Okay. When --</p> <p>4 A I -- I was also employed by those people while I 5 was in school.</p> <p>6 Q Oh.</p> <p>7 A So it was an ongoing six- or seven-year 8 relationship, you know.</p> <p>9 Q So what did you do after you were done driving 10 the oil truck?</p> <p>11 A What did I do? I think I went to work for my 12 father tending bar.</p> <p>13 Q How long did you do that?</p> <p>14 A Oh, thirteen years.</p> <p>15 Q Did you do anything to maintain your aviation 16 training during this time when you were driving an oil 17 truck and bartending?</p> <p>18 A No.</p> <p>19 Q Did you do anything else while you were 20 bartending, any other jobs?</p> <p>21 A No.</p> <p>22 Q What did you do when you were finished</p>	<p>1 Q So there had been at least a fifteen-year gap 2 when you went to PBA, between then and when you had last 3 work in the aviation business?</p> <p>4 A Thirteen, fourteen, fifteen, in that range.</p> <p>5 Q When you joined PBA, did you have to do anything 6 to get back up to speed in the aviation business?</p> <p>7 A Yes, sir, I did.</p> <p>8 Q What'd you do?</p> <p>9 A Well, I was under the scrutiny of the maintenance 10 supervisor during the night; and I would go out and fulfill 11 jobs that he'd have me do over the course of a year.</p> <p>12 Q So it was essentially on-the-job training at PBA?</p> <p>13 A Correct.</p> <p>14 Q Did you have to do anything to renew your A and 15 P?</p> <p>16 A No, the A and P is good for life.</p> <p>17 Q Once you get it, you've got it --</p> <p>18 A Yes, sir.</p> <p>19 Q -- unless they take it away?</p> <p>20 A Correct.</p> <p>21 Q What type of work did you do at PBA?</p> <p>22 A Mechanic.</p>
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<p>1 bartending?</p> <p>2 A Got a job with PBA -- Canal -- Canal Marine, I 3 believe; worked for a while; and got a job with PBA in --</p> <p>4 Q And that stands --</p> <p>5 A -- in the parts department.</p> <p>6 Q That stands for?</p> <p>7 A Provincetown Boston Airlines.</p> <p>8 Q And what type of airline were they? Were they --</p> <p>9 A They were a regional carrier. They had a total 10 of about 280 aircraft at one time.</p> <p>11 Q Were they under contract with a --</p> <p>12 A No.</p> <p>13 Q -- bigger name --</p> <p>14 A No.</p> <p>15 Q -- airline?</p> <p>16 A Well, in the end they were, yes. They were under 17 the umbrella of People's Express at one time.</p> <p>18 Do you remember People's Express?</p> <p>19 Q No.</p> <p>20 A No?</p> <p>21 Q So this was roughly when that you joined PBA?</p> <p>22 A Oh, '85; about '85 I think.</p>	<p>1 Q On what type of aircraft?</p> <p>2 A Oh, boy, they had a variety of aircraft. They 3 had -- I used to work on a Stetson up the Provincetown that 4 did the sight-seeing jumps. I worked on Douglas's DC-3s, 5 402 Cessnas, YS-11s, E- and B-110s, Embraer Air's. 6 I worked a couple other aircraft that they had. 7 Let's see what it was. Cherokee 6 -- I worked Cherokee 6s. 8 They had also one of those also for sight-seeing. They 9 used to like to send me up to Provincetown from Hyannis and 10 let me work on the aircraft and then just drive back.</p> <p>11 Q Any Beechcraft aircraft -- airplanes you worked 12 on there?</p> <p>13 A There no. But it was ongoing thing -- they 14 finally -- people's Express got assumed by Eastern 15 Continental -- slash, Continental. And then that's where I 16 got my Beech experience. They brought in -- first they 17 brought in B-99s, then they brought in C-99s, and then they 18 brought in B-1900s.</p> <p>19 Q And this was all while you were at PBA, People's 20 Express?</p> <p>21 A Well, all while I was employed in that one 22 building because legally I don't know how the names were</p>

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<p>1 changed as they went along. And it's -- but, you know --</p> <p>2 it's -- I'm below that, you know.</p> <p>3 Q But near the end, at least, when you said, I</p> <p>4 think, Eastern or Eastern Continental had it, they brought</p> <p>5 in some Beech planes. Is that right?</p> <p>6 A I think when it was still Bar Harbor Airways,</p> <p>7 they were the ones that brought in the aircraft.</p> <p>8 Q So during your time at PBA and its other forms,</p> <p>9 you had occasion to deal with a number of different</p> <p>10 manufacturers' maintenance manuals, didn't you?</p> <p>11 A Yes, sir.</p> <p>12 Q Your systems there at PBA, did they involve</p> <p>13 actually taking the maintenance manual itself and using</p> <p>14 that as a checklist for a given task, or did they have a</p> <p>15 system like --</p> <p>16 A They --</p> <p>17 Q -- these work cards?</p> <p>18 A They had the work cards. They had their own</p> <p>19 system set up. You know, it's not a duplicate, you know,</p> <p>20 per se; this is this and this and this. It doesn't work</p> <p>21 that way. Everybody wrote their own programs, you know; so</p> <p>22 they varied.</p>	<p>1 relating to the mechanics that were involved and worked on</p> <p>2 this aircraft.</p> <p>3 And these we've seen for each person, and they</p> <p>4 appear to be training logs or training reports of the</p> <p>5 different types of training you guys have received there at</p> <p>6 Colgan during your employment, and they typically have</p> <p>7 tracked with the beginning of someone's employment there.</p> <p>8 And I hand you this, really as much anything, to</p> <p>9 give you a frame of reference to perhaps understand exactly</p> <p>10 when you joined Colgan and what training you got while you</p> <p>11 were there.</p> <p>12 Do you recognize or understand this document as</p> <p>13 doing that?</p> <p>14 A Well, I'd have to scrutinize it and study it. It</p> <p>15 seems like the dates, you start off March '03, '03 --</p> <p>16 Q Actually it goes bottom up.</p> <p>17 A September '90, September '90, PT-6 heavy</p> <p>18 maintenance.</p> <p>19 See, I had PT-6 heavy maintenance when I was with</p> <p>20 Bar Harbor Airways, slash, whatever. I received a</p> <p>21 certificate from Pratt Whitney Canada, which is recognized</p> <p>22 by Colgan Air.</p>
<p>1 Q While at PBA and its various forms, were you ever</p> <p>2 involved in the process of creating the work cards for the</p> <p>3 company --</p> <p>4 A No.</p> <p>5 Q -- from the maintenance manual?</p> <p>6 A No, sir.</p> <p>7 Q That was someone else's job?</p> <p>8 A Yes, sir.</p> <p>9 Q Have you ever done that for anybody?</p> <p>10 A No, sir.</p> <p>11 Q When did you leave PBA or its last version?</p> <p>12 A Well, they left me. They moved out of Hyannis.</p> <p>13 And like I said, I'm a country boy; and I don't like the</p> <p>14 city; so I stayed in Hyannis.</p> <p>15 Q And when did that happen?</p> <p>16 A Oh. '91? '91, I think.</p> <p>17 (The training report was marked Defendant's</p> <p>18 Exhibit No. 31 for identification.)</p> <p>19 BY MR. JONES:</p> <p>20 Q Mr. Desmond, I'm handing you what we've marked</p> <p>21 Exhibit 31, and that is a document that was produced by</p> <p>22 Colgan's counsel in response to our request for documents</p>	<p>1 Q So when --</p> <p>2 (Proceedings participants speaking at the same time.)</p> <p>3 A So you've got --</p> <p>4 Q -- you came over --</p> <p>5 A Yeah.</p> <p>6 Q You got credit, if you will, for training --</p> <p>7 A Correct.</p> <p>8 Q -- you had already done?</p> <p>9 So you weren't at Colgan in June of '90 ye ?</p> <p>10 A No; that's correct.</p> <p>11 Q Does the --</p> <p>12 A I started with Colgan in '92.</p> <p>13 Q The next entry is July of '92 showing a couple of</p> <p>14 other -- three other items; an initial airworthiness</p> <p>15 release, ground handling release.</p> <p>16 Does that square your --</p> <p>17 A Yes, sir --</p> <p>18 Q -- recollection of when you --</p> <p>19 A -- it does.</p> <p>20 Q -- started?</p> <p>21 A Yes, sir.</p> <p>22 Q Just work your way up quickly with me through</p>

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<p>1 that list and describe for me the things that -- the types 2 of training you got at Colgan.</p> <p>3 A What do you want me to start with? The initial 4 Phase II --</p> <p>5 Q Yes.</p> <p>6 A -- Phase III?</p> <p>7 A I think that's Beech --</p> <p>8 Q Is that --</p> <p>9 (Proceedings participants speaking at the same time.)</p> <p>10 A -- Beech --</p> <p>11 Q -- to learn -- is that to learn about the 1900?</p> <p>12 A Phase II; correct.</p> <p>13 I went to flight safety for that. What year is 14 this? This is --</p> <p>15 Q May of '96. Well --</p> <p>16 A '96. I think that's when I went to flight 17 safety. I'm not quite sure really.</p> <p>18 Q There are actually two entries there. There's an 19 initial Phase II in January of '96 and another one in May 20 of '96.</p> <p>21 A I think I went to Saab's -- oh, wait. I went to 22 Beech school someplace -- I've got the records at home, you</p>	<p>1 a lot of time with this, but move on up the list.</p> <p>2 A Just to add to it, I -- when I was with Bar 3 Harbor, slash, Continental, slash, whatever, I received 4 training in all the aircraft. It was quite intensive. The 5 training courses were quite intensive; 99s, 1900s, ATRs. 6 They were quite thorough.</p> <p>7 Q Were those in-house classes --</p> <p>8 A Yes, sir --</p> <p>9 Q -- typically?</p> <p>10 A -- yes, sir, they were. They were two --</p> <p>11 two-week courses given in Bar Harbor -- oh, actually, 12 Bangor, Maine, with an R, Bang- -- not "Banga" but 13 "Bangor," with an R.</p> <p>14 Q Working on up, what else do we have?</p> <p>15 A You know, this is so long ago, I really -- it's 16 not real fresh in my memory.</p> <p>17 Q Well, just looking at this list -- list</p> <p>18 generally, can you remember any other specific training you 19 received while at Colgan that's not reflected here?</p> <p>20 A No, not really. I mean everything's reflected.</p> <p>21 Q During your time in A and P al school and these 22 various training classes about specific aircraft, were --</p>
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<p>1 know -- and flight safety.</p> <p>2 Q To learn about the Beechcraft 1900, aren't there 3 two phases to that program?</p> <p>4 A From flight safety?</p> <p>5 Q Well, whomever might be presenting it.</p> <p>6 A I believe there is, yes.</p> <p>7 Q Did you ever get a Phase I part of the -- of the 8 class?</p> <p>9 A That I'm not sure of. I -- I don't know how 10 they're putting this all together. I'm sure I did.</p> <p>11 Q When you were with Bar Harbor --</p> <p>12 A Yes.</p> <p>13 Q -- had you already with the 1900 for a while?</p> <p>14 A Yes, sir.</p> <p>15 Q The C or the --</p> <p>16 A B.</p> <p>17 Q B?</p> <p>18 So might you have gotten the Phase I version of 19 that training while back there?</p> <p>20 A Yes, sir.</p> <p>21 Q I see.</p> <p>22 The rest of these just -- we don't need to spend</p>	<p>1 was it stressed to you in the teachings that the flight 2 controls are of the most critical aspect of the aircraft?</p> <p>3 A Well, they're the primary controls.</p> <p>4 Q And are you taught that whenever's there's any 5 work done on a flight control surface, that you need to do 6 an operational check?</p> <p>7 A Of course.</p> <p>8 Q And a functional check, to the extent that's any 9 different?</p> <p>10 A Operational -- it's terminology, I suppose.</p> <p>11 Q And the purpose of that is what?</p> <p>12 A To make sure it's correct.</p> <p>13 Q You want to make sure that the surface -- when 14 you move the controls move through its full range of 15 motion? Is that part of it?</p> <p>16 A Yes, sir.</p> <p>17 Q And that's it's moving in the correct direction 18 of the control input?</p> <p>19 A Yes, sir.</p> <p>20 Q So that's something that a mechanic is going to 21 know to do just inherent from his training?</p> <p>22 A Yes.</p>

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<p>1 Q While at A and P school or in any of your other 2 training, were you ever taught about the practice of 3 blocking cables when you're disconnecting a flight control 4 part like an actuator, for example, so that the tension 5 that was originally on the cables from that point 6 throughout the rest of the run stays on?</p> <p>7 A The answer to that question is yes. But the way 8 you're wording it, the tension won't stay on, the tension 9 isn't going to stay on, not to get into it. But you'll 10 keep the perspective routing correct.</p> <p>11 Q By keeping --</p> <p>12 A By blocking.</p> <p>13 Q By blocking --?</p> <p>14 So how do you go about blocking?</p> <p>15 A You clamp the cable against a stationary 16 object --</p> <p>17 Q And --</p> <p>18 A -- like a pulley.</p> <p>19 Q And you do that before you disconnect the part?</p> <p>20 A Correct.</p> <p>21 Q Because by the time you disconnect the part, 22 you've already got slack in the system; right?</p>	<p>1 A I -- I -- I don't think the GMM so much addresses 2 how to do a -- a -- a step, you know. I -- I -- it might 3 be. I don't know.</p> <p>4 Q In your work as a supervisor, at least at one 5 point in Colgan, if not also as a mechanic, were you 6 required to become familiar with the contents of the GMM?</p> <p>7 A Yes, sir.</p> <p>8 Q Well, if -- if the GMM doesn't specifically 9 identify how you go about blocking, is that just something 10 that you expect that a mechanic knows how to do by virtue 11 of his training --</p> <p>12 A Well --</p> <p>13 (Proceedings participants speaking at the same time.)</p> <p>14 Q -- and --</p> <p>15 A -- usually --</p> <p>16 THE WITNESS: I'm sorry.</p> <p>17 A Usually the maintenance manual itself will 18 address that, where a GMM just -- is just steps to 19 generalize the practices of what they want done. You know, 20 I -- I believe. That's the best of my terminology, I can 21 gets out of it, you know.</p> <p>22 BY MR. JONES:</p>
<p>1 A You're going to have get slack anyhow because 2 you're going to have to disconnect it. And the natural 3 tendency is -- you know, of anything that you disconnect is 4 to relax a little bit; so, therefore, your tensions aren't 5 going to be correct.</p> <p>6 Q But -- but you block before you disconnect, 7 because otherwise you --</p> <p>8 A Correct.</p> <p>9 Q -You introduce more --</p> <p>10 A Correct.</p> <p>11 Q -- slack?</p> <p>12 A Yes, sir.</p> <p>13 MR. JONES: Okay. We need to work on not 14 speaking over each other.</p> <p>15 I know.</p> <p>16 THE WITNESS: I'm sorry.</p> <p>17 MR. JONES: It's okay. I do it too.</p> <p>18 BY MR. JONES:</p> <p>19 Q Has it ever been a practice at Colgan to block 20 cables when disconnecting things like actuators?</p> <p>21 A Yes, sir.</p> <p>22 Q Is it in the GMM?</p>	<p>1 Q So the GMM is not really there to serve that type 2 of detailed purpose?</p> <p>3 A I -- I don't believe so; but it may be in -- I 4 don't know how they interact really. But I'm sure there's 5 interactions, but I don't think they -- they don't go down 6 the line and say, "Remove this elevator Step A, Block A, 7 Step B. Do you know what I'm saying?"</p> <p>8 Q You look to the work cards or the maintenance 9 manual for the step-by-step actions?</p> <p>10 A Yes, sir.</p> <p>11 Q But as far as the general practice of blocking 12 cables when loosening things, that's something you would 13 expect a mechanic to do by virtue of his training?</p> <p>14 A Yes, sir.</p> <p>15 Unless --</p> <p>16 Q You --</p> <p>17 A -- let's say it's a little short run where it's 18 not required. You know, I mean sometimes maybe you're -- 19 you're going to be inducing more of a problem than if you 20 blocked it versus you hadn't blocked it or if you had 21 blocked it versus hadn't blocked it.</p> <p>22 Let's say you have a very short run and there's</p>

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<p>1 A There's --</p> <p>2 Q -- to be changed?</p> <p>3 A There's been -- there's been many.</p> <p>4 I went to I a Beech conference, and I asked for</p> <p>5 access pants to be employed to get to the number 1, 2, 3,</p> <p>6 and 4 flap actuators they just laughed at me, blew it away.</p> <p>7 Q Can you remember any other specifics?</p> <p>8 A Oh, no. I'm not -- no, I don't want to go there</p> <p>9 anymore. Thank you. I mean --</p> <p>10 Q Well, I have to ask you --</p> <p>11 A You know, I mean I'm not here to complain, you</p> <p>12 know. I'm just trying to answer your questions --</p> <p>13 Q I know.</p> <p>14 A -- as best I can.</p> <p>15 Q And I have to ask you: Do you remember any</p> <p>16 others?</p> <p>17 A No, I -- no. It's -- I just remember the</p> <p>18 general -- generality of it all, you know. That's what I</p> <p>19 remember.</p> <p>20 I've seen -- I've seen screwups before in the</p> <p>21 manuals but --</p> <p>22 Q When you come upon a discrepancy or something you</p>	<p>1 manual, your practice personally was to write up the issue</p> <p>2 and send it to the manufacturer?</p> <p>3 A Well, I always talked with the Beech reps quite</p> <p>4 regularly; and I would bring it up with them. And they</p> <p>5 would have -- they would have -- there was a form with</p> <p>6 Beech. But you'd fill a form out -- I did it three or four</p> <p>7 times, and I never got any satisfaction from them.</p> <p>8 Q Did any of the suggested changes you ever turned</p> <p>9 in get implemented?</p> <p>10 A Not that I know of.</p> <p>11 Q On any topic?</p> <p>12 A No.</p> <p>13 Q Did you ever go back and check to see if</p> <p>14 subsequent revisions made changes --</p> <p>15 A No, because --</p> <p>16 Q -- to the topic?</p> <p>17 A -- I'm not employed by Beech. I've got so much</p> <p>18 to do for myself, you know. I always tried to point it out</p> <p>19 to someone but --</p> <p>20 Q But for those things that you raised concerns</p> <p>21 about, you didn't go back later at the next revision to see</p> <p>22 if it was changed?</p>
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<p>1 believe to be an error in the -- in the manual of any</p> <p>2 manufacturer, is there a procedure within Colgan you're</p> <p>3 supposed to follow?</p> <p>4 A With Colgan's manuals we would call the</p> <p>5 inspection department and point it out.</p> <p>6 Q Well, actually I'm asking about OEM's manuals,</p> <p>7 but is there --</p> <p>8 A I'm not --</p> <p>9 Q -- some --</p> <p>10 A -- really sure what we have in place, you know.</p> <p>11 Like, it's been two or three years since I've really gotten</p> <p>12 into the GMM myself, you know. I used to be involved in</p> <p>13 that more, but it's been quite few years since I've really</p> <p>14 gotten involved into it heavily.</p> <p>15 So I have -- so you're asking me a direct</p> <p>16 question, This, this, this? I'd have to go and look --</p> <p>17 Q That is a fair answer.</p> <p>18 A -- you know.</p> <p>19 Q If there ways such a policy, is the place to look</p> <p>20 in the GMM?</p> <p>21 A Of course, yeah.</p> <p>22 Q And when you would find a discrepancy in a</p>	<p>1 A No -- well, yeah, I would go back and see if it</p> <p>2 changed. But, you know, that would be -- that might be a</p> <p>3 year later.</p> <p>4 Q And do you remember --</p> <p>5 A And by that time, you know -- my memory's not</p> <p>6 good that good.</p> <p>7 Q So you might not remember exactly --</p> <p>8 A I -- that's true; I might not.</p> <p>9 Q You might not remember exactly what you had asked</p> <p>10 them to change?</p> <p>11 A Correct, that's correct.</p> <p>12 Q So you wouldn't be in a position to be able to</p> <p>13 check if they had?</p> <p>14 A No, no.</p> <p>15 Q Do you remember that any that you did request to</p> <p>16 be changed that were --</p> <p>17 A No --</p> <p>18 Q -- that you noticed?</p> <p>19 A -- not specifically, no.</p> <p>20 Q Who did you mainly deal with at Raytheon when you</p> <p>21 had questions?</p> <p>22 A Oh, you guys had three or four people that would</p>

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<p>1 (Proceedings participants speaking at the same time.)</p> <p>2 Q — I'm trying to understand the tool better.</p> <p>3 Does it have a moving part? —</p> <p>4 A No, no.</p> <p>5 Q — or does it read —</p> <p>6 A No, no.</p> <p>7 Q — with a —</p> <p>8 A No.</p> <p>9 Q — a —</p> <p>10 A No.</p> <p>11 Q How does it read?</p> <p>12 A Degrees.</p> <p>13 Q Well, how does it — how does it read the movement of the tab? Does it bounce a lighted off it and read that? Does it have an — an arm that moves with it up and down? How does that work?</p> <p>17 A It -- it has an increment where it reads out the degrees; 3, 4, 5, 6.</p> <p>19 Q Right. That's what you read on the screen.</p> <p>20 But what I'm saying: How does the instrument take note of the movement of the tab? How does it see the movement of the tab?</p>	<p>1 you set it on the --</p> <p>2 A You're --</p> <p>3 Q -- tab --</p> <p>4 A -- zeroing out the tab. Then you set it at the -- the protractor on the tab, and you zero the protractor so they're both starting at zero.</p> <p>7 Q And the way you zero tab in the first place is just to put the wheel at zero up front?</p> <p>9 A No. You have -- boy, you're quizzing the hell out of me, aren't you?</p> <p>11 Q I'm trying to understand.</p> <p>12 A They paying you a lot of money for this?</p> <p>13 You would -- you would put rig pins in. They have different holes that you can rig pins in which will give you a neutral.</p> <p>16 Q On the elevator --</p> <p>17 A Everything does.</p> <p>18 Q -- and the trim --</p> <p>19 A Everything's --</p> <p>20 Q -- tab?</p> <p>21 A -- everything's got a rig hole, rig pin hole.</p> <p>22 Q All right. So once you get either the travel or</p>
<p>1 A It's like a level. It's -- it's like a level.</p> <p>2 You know --</p> <p>3 Q All right.</p> <p>4 A -- when you -- the bubble's going to move. Well, in this particular case your degrees move, you know, a printout, a read-out. Your degrees will move. Is that what you're asking me.</p> <p>8 Q Kind of.</p> <p>9 So you sit the instrument on the elevator itself or the tab itself?</p> <p>11 A It depends. What are you reading?</p> <p>12 Q You're trying to read the travel of the tab.</p> <p>13 A You set it on the tab itself.</p> <p>14 Q All right. And does it attach somehow? Does it stick —</p> <p>16 A Well --</p> <p>17 Q -- down or get clamped on?</p> <p>18 A You could if you wanted to.</p> <p>19 Q Do you need to hold it in place with your hand if you don't --</p> <p>21 A You could do that also.</p> <p>22 Q So you assume, then, that you are at zero when</p>	<p>1 the digital protractor, what's the general process for checking the operation of the tab? What do you do?</p> <p>3 A Run it up, run it down.</p> <p>4 Q And you check that it goes --</p> <p>5 A Degrees up, degrees down.</p> <p>6 Q When you --</p> <p>7 A Because it's going tell you degrees down; it's going to tell you degrees up.</p> <p>9 Q And you check that against the specs in the maintenance manual --</p> <p>11 A Sure.</p> <p>12 Q -- for the correct travel, the right distance?</p> <p>13 A Yes.</p> <p>14 Q And the right direction when you give the control input at the wheel; right?</p> <p>16 A The right direction, when you give control in for the -- on the wheel?</p> <p>18 Q Right. In other words, if in you want to go nose up, let's say, at the wheel --</p> <p>20 A I --</p> <p>21 Q -- you turn the wheel towards the nose-up --</p> <p>22 A I --</p>

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<p>1 Q -- direction --</p> <p>2 A You know, I don't know how the book states that.</p> <p>3 Does the book state that, or does the book say, "Up travel,</p> <p>4 up tab travel"? I think the book -- I think your book --</p> <p>5 you represent Beech. I think your book states, "Up tab</p> <p>6 travel". It doesn't state, "nose up", "nose down". I</p> <p>7 think it just relates to --</p> <p>8 Q The tab itself?</p> <p>9 A -- the relative degrees that you were taking of</p> <p>10 whatever you are doing. It doesn't revert to the aircraft</p> <p>11 itself.</p> <p>12 Q But as a part of your check, having done some</p> <p>13 work on a control surface, you want to -- you want to be</p> <p>14 sure, don't you, that when you turn the wheel to go nose</p> <p>15 up, the control surface is the moving in the correct</p> <p>16 direction to go nose up?</p> <p>17 A Oh, yeah.</p> <p>18 Q Okay. So you try and do that as a part of</p> <p>19 your -- your check?</p> <p>20 A If my ass is sitting in the seat in here.</p> <p>21 Absolutely.</p> <p>22 Q But you did not participate at all in the checks</p>	<p>1 Q And what's your understanding of the NTSB's --</p> <p>2 A They're --</p> <p>3 Q -- findings?</p> <p>4 A -- saying that the cable was in backwards or the</p> <p>5 drum was in backwards, causing the deflection to work</p> <p>6 opposite of what it should. I believe. I guess.</p> <p>7 I don't really like to read that. I have the</p> <p>8 whole report at home I took off the Internet, but I don't</p> <p>9 really like to read that because you just saw me break</p> <p>10 down. And, you know I'm going to do -- you -- you keep</p> <p>11 this up, I'm going to break down again.</p> <p>12 Q I certainly don't mean to have that happen.</p> <p>13 A You know, I mean it was a rough thing, you know.</p> <p>14 Q If --</p> <p>15 A I take things pretty hard sometimes. People</p> <p>16 don't think I do, but I do.</p> <p>17 Q If the cable was rigged such that the system was</p> <p>18 operating in the opposite direction, should the checks we</p> <p>19 just discussed have caught it?</p> <p>20 A No, because, like, what I'm saying to you -- I</p> <p>21 don't -- as far as if the book does say just relative to</p> <p>22 the tab -- I don't know the verbiage in the book. I'm not</p>
Page 111	Page 113
<p>1 of the --</p> <p>2 A No.</p> <p>3 Q -- trim tab system following this --</p> <p>4 A No, sir --</p> <p>5 Q -- service?</p> <p>6 A -- I did not.</p> <p>7 Q You relied upon Mr. Kinan, Mr. Battaglia,</p> <p>8 Mr. Servis, and others who were involved in that; correct?</p> <p>9 MR. ALMY: Object to the form.</p> <p>10 But you can answer, if you can.</p> <p>11 A Did I reply upon them?</p> <p>12 BY MR. JONES:</p> <p>13 Q In your process of approving --</p> <p>14 A I --</p> <p>15 Q -- the package.</p> <p>16 A -- I don't really rely -- in approving the</p> <p>17 package, yes.</p> <p>18 Q Okay. Did you later become aware of what the</p> <p>19 NTSB's finding was as to why the aircraft accident</p> <p>20 occurred?</p> <p>21 A Did I become aware of it? Yeah, at some point I</p> <p>22 did, yes.</p>	<p>1 sure of the verbiage, how -- what they're saying in the</p> <p>2 book. Are they saying, "tab up," or "nose up," or -- you</p> <p>3 know. I'm not sure what they're saying -- how they're</p> <p>4 stating it in the book.</p> <p>5 Like, they'll give you, let's say, six degrees up</p> <p>6 travel limit for you to check, up tab travel limit. I</p> <p>7 believe that's why the book is written. They're not</p> <p>8 stating -- I don't think they're stating, "up travel limit</p> <p>9 nose down". I don't think they're saying it like that.</p> <p>10 Q Well, didn't we just agree that part of the</p> <p>11 process of checking the flight control system after having</p> <p>12 worked on it is to be sure that the control surfaces are</p> <p>13 moving in the correct direction for the input given?</p> <p>14 A I would, yeah. I said I would.</p> <p>15 Q So if -- if this --</p> <p>16 A But I'm not referring to the book. I'm not</p> <p>17 quoting out of the book. I don't know what the book says.</p> <p>18 I don't the book here in front of me. I would have to</p> <p>19 refer to book to see that what the book says to answer that</p> <p>20 specific question the way you're asking it.</p> <p>21 Q You just --</p> <p>22 A You know, what I'm saying?</p>

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 4

COPY

Page 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

-----x

:

COLGAN AIR, INC., :

:

Plaintiff, :

:

vs. : Civil Action

: No. 1:05 cv 213

RAYTHEON AIRCRAFT COMPANY, :

:

Defendant. :

:

-----x

McLean, Virginia

Thursday, June 23, 2005

Videotaped deposition of DOMINICK BATTAGLIA, JR., witness, called for examination by counsel for the defendant, pursuant to notice, at the offices of Mark A. Dombroff, Esq., Dombroff & Gilmore, P.C., 1676 International Drive, Penthouse, McLean, Virginia, before Malynda D. Whiteley, a Registered Professional Reporter and a notary public in and for the State of Virginia, beginning at 4:48 p.m., when were present on behalf of the respective parties:

Page 2

Page 4

1 A P P E A R A N C E S
 2 FOR THE PLAINTIFF:
 3 MARK A. DOMBROFF, ESQ., Dombroff & Gilmore, P.C.,
 1676 International Drive, Penthouse, McLean,
 Virginia 22102
 4
 5 FOR THE DEFENDANT:
 6 MICHAEL G. JONES, ESQ., Martin, Pringle, Oliver,
 Wallace & Bauer, L.L.P., 100 North Broadway,
 Suite 500, Wichita, Kansas 67202
 and
 7 ROBERT T. HALL, ESQ., Hall, Sickels, Frei &
 Kattenburg, P.C., 12120 Sunset Hills Road, Suite
 150, Reston, Virginia 20190-3231
 8
 9
 10 ALSO PRESENT:
 11 William Sale, videographer
 12
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 22

1 PROCEEDINGS
 2 THE VIDEOGRAPHER: This is the fourth in a series
 3 of depositions. Today is Thursday, June 23rd, 2005. The
 4 time is 4:48 p.m.
 5 This is the case captioned Colgan Air, Inc.,
 6 versus Raytheon Aircraft Company.
 7 Would the court reporter please swear the
 8 witness.
 9 Whereupon,
 10 DOMINICK BATTAGLIA, JR.,
 11 witness, was called for examination by counsel for the
 12 defendant, and after having been duly sworn, was examined
 13 and testified as follows:
 14 EXAMINATION BY COUNSEL FOR THE DEFENDANT
 15 BY MR. JONES:
 16 Q Mr. Battaglia, my name is Mike Jones. I'm an
 17 attorney from Wichita, Kansas. I represent Raytheon
 18 Aircraft Company in some litigation brought here in
 19 Virginia by Colgan Air.
 20 Are you familiar with that situation?
 21 A Yes.
 22 Q We've asked you to come here today to provide

Page 3

Page 5

1 I N D E X
 2
 3 EXAMINATION BY COUNSEL FOR:
 4 DEFENDANT,
 5 MR. JONES
 6 WITNESS
 7 Dominick Battaglia, Jr. 4
 8
 9 E X H I B I T S
 10 DEFENDANT'S FOR IDENT.
 11 No. 28 (Employee Counseling Form) 11
 12 No. 29 (Employee Counseling Form) 14
 13 No. 30 (Time list) 17
 14
 15
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 17
 18
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 21
 22

1 some testimony about some mechanic work you had performed
 2 on the aircraft that crashed that became the subject of
 3 this lawsuit.
 4 Are you aware of that?
 5 A Yes, I am.
 6 Q Have you ever had your deposition taken before?
 7 A No.
 8 Q It's very simple. It's a question-and-answer
 9 format. I'll put a question to you; you provide me an
 10 answer. We need to try to not to talk over one another.
 11 If you need a break, let me know; and we'll try
 12 and do that —
 13 A Okay.
 14 Q — okay?
 15 What's your full name?
 16 A Dominick Battaglia, Jr.
 17 Q Where do you live?
 18 A In Albany, New York, Stillwater.
 19 Q What's your street address?
 20 A [REDACTED] Stillwater, New York
 21 [REDACTED]
 22 Q Social Security number?

	Page 6	Page 8
1	A 077-70-9554.	1 where we lived and watch the planes come in and out of
2	Q Where do you work?	2 LaGuardia actually, and I always wanted to do something
3	A At Colgan Air in Albany, International Airport.	3 with them.
4	Q How long have you worked for Colgan?	4 Q So how did you end up in Florida for your A and P
5	A A total of three years and a couple of months	5 school?
6	right now.	6 A Me and my girlfriend, wife now, we decided to
7	Q So you started in what?	7 move down there for a little while and see how we can --
8	A 2002.	8 see how we do.
9	Q April of 2002?	9 And I just happened to talk to my neighbor, and
10	A '02, yes.	10 he said he had two of his relatives go through the school.
11	Q How long have you been working out of the Albany	11 And he said, "Why don't you try it?"
12	location?	12 So I did. I went to the school and talked to
13	A Since last May.	13 them about what -- you know, how long the classes are and
14	Q Where have you worked for Colgan previously?	14 what days and, you know, how long the time frame is.
15	A In Hyannis.	15 And -- and I decided within three days, and I went. And
16	Q Did you start with Colgan in Hyannis?	16 that was what I wanted to do for my career.
17	A Yes, I did.	17 Q Generally speaking what do they teach you at A
18	Q Where did you do your initial training while at	18 and P school?
19	Colgan?	19 A There were six courses. Basic was just a power
20	A Before I went to the hangar, I had done training	20 plan, familiarizing with technical terms, familiarizing
21	in Manassas in the class and then on-the-job training for	21 yourself with the manuals and the computers, how to use
22	some other stuff.	22 them, how to find stuff.
	Page 7	Page 9
1	Q At Manassas?	1 Q Did they teach you how to read and follow
2	A No, at the hangar, after I got to the hangar.	2 maintenance manuals?
3	Q In Hyannis?	3 A Yes.
4	A Yes.	4 Q And do they teach you generally that when you're
5	Q Tell us about your background and training as an	5 working with a maintenance manual and it gives you
6	aviation mechanic, including your A and P school and any	6 step-by-step instructions on what to do, you do every step?
7	other work you've done in the aviation field.	7 A Yes.
8	A My first aviation was with the National Aviation	8 Q And you do them in the order you're given?
9	Academy school in Clearwater, Florida. That was actually	9 A Yes.
10	my first hands on any plane down there. That was 14	10 Q And are you taught that you have discretion to
11	months --	11 depart from those steps, or are you supposed to stick with
12	Q Was your A and P school?	12 them?
13	A -- of class.	13 A They drilled it into our heads that we have to go
14	Yes.	14 by the maintenance manual.
15	Then graduated my class in 2001, I believe.	15 Q And when you got training at Colgan, did that
16	Q Prior to going to A and P school, had you had any	16 notion change? In other words, did Colgan treat you -- or
17	mechanical background?	17 teach you differently on that topic?
18	A Yes, I worked with cars for a -- a while.	18 A No, not -- not necessarily that topic. It was
19	Q What led you to get into the aviation mechanic	19 just getting familiarized with the aircraft before I had
20	business?	20 went out into the hangar and actually touched the aircraft.
21	A Bigger and better things, more exciting. Me and	21 Q So you needed to get familiar with the 1900
22	my father used to sit on the end of the -- over in New York	22 airliner because that's what they flew at Colgan?

Page 10	Page 12
<p>1 A Right.</p> <p>2 Q And that was a part of your -- your Phase I and</p> <p>3 your Phase II training that you got once you joined Colgan?</p> <p>4 A Yes.</p> <p>5 Q So was Colgan your first job in the aviation</p> <p>6 business?</p> <p>7 A Yes, it was.</p> <p>8 Q How did you come upon Colgan as an employer?</p> <p>9 A I actually filled out an application for Colgan</p> <p>10 before I graduated school, with the other airlines that was</p> <p>11 out there; and they just called up one day.</p> <p>12 Q And you've been there ever since?</p> <p>13 A Yes, I have.</p> <p>14 Q Your first title was what?</p> <p>15 A As an A and P mechanic.</p> <p>16 Q Is that still your title?</p> <p>17 A Yes. And also I have a lead position now that I</p> <p>18 just got about a week and a half ago.</p> <p>19 Q So when the work was done on 240 in August of</p> <p>20 '03, you were a mechanic but not a lead yet?</p> <p>21 A Right.</p> <p>22 Q Who was your supervisor?</p>	<p>1 decided to take the bolt out of the -- out of the tail</p> <p>2 stand to let the tail stand fall in it's -- in itself. But</p> <p>3 the acting supervisor said not to do it that way. He said,</p> <p>4 "Take the pin out of top here and just hit it," and the</p> <p>5 tail stand would fall back and the plane would come down.</p> <p>6 And I didn't think quick enough to stop the</p> <p>7 mechanic and to, I guess, question the supervisor at the</p> <p>8 time and say, "No, it's not going to work that way." And</p> <p>9 he had hit it out and did what he did. And when it came</p> <p>10 out, it fell out and then went into the plane as the plane</p> <p>11 came down.</p> <p>12 So I went to stop it; but I thought -- when I was</p> <p>13 thinking, I was thinking too slow, I guess; and I couldn't</p> <p>14 grab the situation quick enough.</p> <p>15 Q So who were the other two people involved in</p> <p>16 this?</p> <p>17 A Sean McCarthy and -- I can't think of his name.</p> <p>18 He was only there for a short time.</p> <p>19 Q Who was the supervisor?</p> <p>20 A He was an acting supervisor at the time, and I</p> <p>21 can't remember his name.</p> <p>22 Q And you were reprimanded over this event. That's</p>
Page 11	Page 13
<p>1 A Perry.</p> <p>2 Q Perry Sarluca?</p> <p>3 A Yes.</p> <p>4 (The Employee Counseling Form was marked</p> <p>5 Defendant's Exhibit No. 28 for identification.)</p> <p>6 BY MR. JONES:</p> <p>7 Q I'm handing you what we've marked as Exhibit 28.</p> <p>8 We had asked Colgan to produce documents that relate to the</p> <p>9 employment of the various mechanics who worked on the</p> <p>10 aircraft preceding the accident, and this was amongst the</p> <p>11 papers that related to you. This speaks of an event in</p> <p>12 March of 2003 where an aircraft was damaged in an improper</p> <p>13 jacking event.</p> <p>14 Do you remember that?</p> <p>15 A Yes, I do.</p> <p>16 Q What happened?</p> <p>17 A We performed the maintenance that night, I</p> <p>18 believe, so that it required to jack the aircraft off the</p> <p>19 floor. I can't recall what it was for exactly. But I do</p> <p>20 remember that morning we took the aircraft off the jacks,</p> <p>21 and the tail stand was still attached to it.</p> <p>22 We proceeded to -- one -- the one other mechanic</p>	<p>1 what 28 is about; is that right?</p> <p>2 A Yes.</p> <p>3 Q Were the other two?</p> <p>4 A Yes, they were.</p> <p>5 Q And your role in this was what exactly?</p> <p>6 A That's what I tried to ask the supervisor that</p> <p>7 was writing me up, which was -- wasn't there that night.</p> <p>8 And in another paper there was said that I would -- didn't</p> <p>9 have any take in that situation actually. I can't</p> <p>10 remember --</p> <p>11 Q Another paper?</p> <p>12 A Yeah.</p> <p>13 Q What --</p> <p>14 A It was -- it was actually from Miguel, a letter.</p> <p>15 No. I'm sorry. I'm thinking of something else.</p> <p>16 Q Okay. So you were given a written warning, and</p> <p>17 was that the end of this issue?</p> <p>18 A I was telling him at that time that I actually</p> <p>19 didn't have hands on it. And he said, "I got to write you</p> <p>20 up anyway." And I was like, "Oh, okay".</p> <p>21 Q And who was this you were talking to?</p> <p>22 A To Perry, the person that was writing me up.</p>

Page 14	Page 16
<p>1 Q And he's the one who signed this?</p> <p>2 A Yes.</p> <p>3 (The Employee Counseling Form was marked</p> <p>4 Defendant's Exhibit No. 29 for identification.)</p> <p>5 BY MR. JONES:</p> <p>6 Q I'm handing you now what we've marked as 29.</p> <p>7 This is another document that Colgan's counsel produced to</p> <p>8 us in response to our request for employment documents on</p> <p>9 mechanics. And this is a -- another Employee Counseling</p> <p>10 Form relating to you for an event that occurred in May of</p> <p>11 2003.</p> <p>12 Can you tell me about this one.</p> <p>13 A Yes. There was a few things going on that night;</p> <p>14 hot section, the Detail Number One, fuel nozzles, other</p> <p>15 repairs that we had to do and other checks.</p> <p>16 I got taken off the hot section to do a flap</p> <p>17 because there was found to be a crack in the flap, went to</p> <p>18 put it together, and turned around to the -- one of the</p> <p>19 mechanics and said, "Do you remember how this went on a</p> <p>20 turnbuckle?" And he said, "No." And I said, "All right</p> <p>21 let's go to the maintenance manual."</p> <p>22 Went to the maintenance manual, and the way the</p>	<p>1 A They just talked to me about the maintenance</p> <p>2 manuals and, you know, went over with me about a couple of</p> <p>3 things on maintenance manuals; asked me how do I use them</p> <p>4 and stuff. And I told them how I do it and -- you know,</p> <p>5 "Do you have it with you when you do your job?" And I</p> <p>6 said, "Yes."</p> <p>7 Q And who was overseeing this retraining of you?</p> <p>8 Was that Perry?</p> <p>9 A I can't recall who it was.</p> <p>10 Q Once you talked to them and explained to them how</p> <p>11 you -- explained to them how you do things, were they</p> <p>12 satisfied?</p> <p>13 A I think we talked for an hour, somewhere around</p> <p>14 in that area.</p> <p>15 Q And at the end of that were they satisfied that</p> <p>16 you were properly trained in the use of maintenance</p> <p>17 manuals?</p> <p>18 A Yes.</p> <p>19 Q Did the fact that this reprimand on your</p> <p>20 record -- or these two actually came within a few months of</p> <p>21 each other cause you any other problems with your</p> <p>22 employment? Did they suspend you or have any other action</p>
<p style="text-align: center;">Page 15</p> <p>1 maintenance manual said to put it in is the way I put it</p> <p>2 in. I read the description, also looked at the picture.</p> <p>3 And when I put it all together, we -- I went up in the</p> <p>4 cockpit, ran the flaps. And by the time they could tell me</p> <p>5 to stop, it was already damaging the flap and the cove</p> <p>6 inside where that flap sits.</p> <p>7 Q So it was attached wrong?</p> <p>8 A Yes, it was attached backwards actually. The</p> <p>9 picture was very -- not very -- but it actually wasn't</p> <p>10 clear. After we decided that the picture was wrong in that</p> <p>11 section of the maintenance manual.</p> <p>12 Q And you were written up for this?</p> <p>13 A Yes.</p> <p>14 Q And one of corrective actions was that you would</p> <p>15 be retrained on the use of maintenance manuals. What did</p> <p>16 you do to be retrained in the use of maintenance manuals?</p> <p>17 Or were you?</p> <p>18 A Yes, I was. I can't recall what exactly was</p> <p>19 taken to -- I guess, talked to me about it. I can't</p> <p>20 recall.</p> <p>21 Q So do you remember what you did to -- to do any</p> <p>22 retraining?</p>	<p style="text-align: center;">Page 17</p> <p>1 against you?</p> <p>2 A No, they haven't.</p> <p>3 Q Other than those two events, were there any other</p> <p>4 events at Colgan while you've been there where you've been</p> <p>5 written up or reprimanded?</p> <p>6 A No.</p> <p>7 Q How have your performance evaluations been in</p> <p>8 general?</p> <p>9 A Average, a little over average.</p> <p>10 Q And who -- who does those performance evaluations</p> <p>11 of you?</p> <p>12 A The --</p> <p>13 Q Has it always been the same person?</p> <p>14 A When I was at Hyannis base, Perry has done them</p> <p>15 because he's the supervisor at the time. And he worked the</p> <p>16 nights, so that's who did that. And the base manager in</p> <p>17 Albany has done my last one, which is -- was this April --</p> <p>18 this past April.</p> <p>19 (The time list was marked Defendant's Exhibit No.</p> <p>20 30 for identification.)</p> <p>21 BY MR. JONES:</p> <p>22 Q Mr. Battaglia, I'm handing you Exhibit 30. This</p>

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<p>1 is another document that Colgan's counsel produced to us in 2 response to requests for information about mechanics. And 3 this shows your clocking in, clocking out time and the 4 hours on the clock up to the day of the accident.</p> <p>5 And do you remember the day of the accident?</p> <p>6 A The exact date of the accident, or what are 7 you --</p> <p>8 Q I'm just asking you if you remember. If you 9 don't, that's fine. It was August 26th, 2003.</p> <p>10 Does that square with your rough recollection?</p> <p>11 A Yes, it was in August; I know that.</p> <p>12 Q What was your typical schedule in this time 13 frame?</p> <p>14 A I worked 8:30 to 7:00 -- it was the third 15 shift -- sunday to Wednesday, with three days off. It was 16 a 10-hour workday.</p> <p>17 Q So the week before this accident, you were on 18 vacation on Sunday, the 17th. Am I reading that right?</p> <p>19 A Yes.</p> <p>20 Q So you worked Monday through Thursday that week?</p> <p>21 Is that right?</p> <p>22 A Yes.</p>	<p>1 other mechanics.</p> <p>2 Q So who is the mechanic helping you?</p> <p>3 A The gentleman was Jimmy Bowes.</p> <p>4 Q Jimmy Bowes?</p> <p>5 A Yes.</p> <p>6 Q Was he junior or senior to you?</p> <p>7 A Junior to me.</p> <p>8 Q Was he a mechanic or a mechanics' helper?</p> <p>9 A He was a mechanic.</p> <p>10 Q So he had his A and P license?</p> <p>11 A Yes, he has.</p> <p>12 Q To your knowledge, is he with Colgan any longer?</p> <p>13 A Yes, he is.</p> <p>14 Q And between the two of you, did one of you take a 15 larger or smaller role in the task or were you working 16 evenly?</p> <p>17 A I guess I did most of the removal of the 18 left-hand trim tab actuator the first night.</p> <p>19 Q And what did -- I'm sorry. Tell me his name 20 again.</p> <p>21 A Jimmy Bowes.</p> <p>22 Q What did Jimmy do while you were removing it?</p>
Page 19	Page 21
<p>1 Q And then Sunday, the 24th, you came back to work 2 after having been off for two days; right?</p> <p>3 A Yes, I have.</p> <p>4 Q And that day, on Sunday, the 24th, you put in a 5 16.4-hour day; is that right? 16.38 to be precise?</p> <p>6 A Yes.</p> <p>7 Q Was that an unusually long day for you?</p> <p>8 A No.</p> <p>9 Q Do you typically work 16-hour days?</p> <p>10 A Not all the time. It was every once in a while 11 actually.</p> <p>12 Q We'll go through it in detail. But describe for 13 me first just generally what maintenance you require having 14 been -- or recall having been involved in on aircraft 240 15 in the days leading up to the accident.</p> <p>16 A I walked into work Sunday night, and the lead 17 mechanic came up to me and gave me a rundown of that the 18 elevator trim tab actuators had failed their free play 19 check the night before. He proceeded to hand me a 20 left-side elevator trim tab actuator and asked me to go up 21 there with another mechanic and replace that one, which he 22 entailed -- gave the other actuator, the other side, to two</p>	<p>1 A He was helping position it and hold in it place 2 while I got the bolts in and put the cables back on and 3 pretty much helping me out up there with a second hand.</p> <p>4 Q Let me hand you what we've previously marked 5 Exhibit 4 and ask if that's the maintenance work order that 6 you were given for replacing the actuator.</p> <p>7 A The first night or the second night? because this 8 is the right-hand, and it was -- the right-hand was the 9 second night that I signed off.</p> <p>10 Q So you would have been given a separate one of 11 these for the first job of replacing the left-hand side?</p> <p>12 A Right.</p> <p>13 Q And who gave you that task?</p> <p>14 A Dan Kinan.</p> <p>15 Q When you removed the actuator, did you -- well, 16 when you did the job to remove and replace it, what do you 17 do? Do you get some sort of checklist to do the job with?</p> <p>18 A We actually have the maintenance manual outside 19 down on the table because we were up on a -- a scaffolding, 20 so the maintenance manual is sitting outside in the hangar.</p> <p>21 Q Did you have the whole manual, or did you have a 22 printout of the REPS chapter of the manual?</p>

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<p>1 A No; it was -- it was a binder with other 2 procedures in of other things. But we had it open to that 3 chapter.</p> <p>4 Q So you had the paper maintenance manual you were 5 working with --</p> <p>6 A Yes.</p> <p>7 Q -- to remove the left-hand actuator?</p> <p>8 A Yes.</p> <p>9 Q Now, you've used both the REPS manual and the 10 paper manual before; right?</p> <p>11 A Yes.</p> <p>12 Q And they're the same content, just different -- 13 one's a computer and one's paper; is that right?</p> <p>14 A Right.</p> <p>15 Q When you go to the computer version of it, do you 16 print off the pages and take it back to your workspace?</p> <p>17 A Yes, we do.</p> <p>18 Q Exhibit 20 is a printout from the REPS manual. 19 Does -- is it the set of procedures for removing and 20 replacing the actuator?</p> <p>21 (The witness reviewed document.)</p> <p>22 A Yes, it is.</p>	<p>1 A Yes, in the hangar.</p> <p>2 Q Now, to do "it" what do you mean?</p> <p>3 A To do the removal of the trim tab actuators.</p> <p>4 Q So you had taken out actuators before?</p> <p>5 A Yes, I have.</p> <p>6 Q And in previous occasions you left the elevator 7 in place as well?</p> <p>8 A Yes.</p> <p>9 Q And who taught you to do that?</p> <p>10 A I believe it was Dan on -- you know, maybe a 11 couple -- couple other times it was somebody else that I 12 was helping out to get on-the-job training.</p> <p>13 Q Did it concern you that you were skipping steps 14 in a maintenance manual?</p> <p>15 A Yes and no. Since it wasn't a bad flight 16 surface, I didn't ask why not to remove it. Because it was 17 a good flight surface, I didn't see forth (sic) of taking 18 it off and accidentally damaging it or damaging components 19 while removing it.</p> <p>20 Q What was your understanding for the purpose of 21 taking it off?</p> <p>22 A For -- it said better access, which there was</p>
Page 23	Page 25
<p>1 Q Item C of that list for removal calls for the 2 removal first of the entire elevator.</p> <p>3 Do you see that?</p> <p>4 (The witness reviewed document.)</p> <p>5 A Yes, in Step C.</p> <p>6 Q And that wasn't done, was it?</p> <p>7 A No, it wasn't.</p> <p>8 Q Why not?</p> <p>9 A I have asked the lead that night if we should 10 remove them. He said to hold on and he would ask the 11 supervisor. And the supervisor came back to him and said, 12 "No." He came back to me and said, "No."</p> <p>13 Q So who was the lead who asked the supervisor?</p> <p>14 A Dan Kinan.</p> <p>15 Q And who was the supervisor?</p> <p>16 A Perry Sarluca.</p> <p>17 Q So is it normally your procedure before you 18 depart from a step in the maintenance manual to get 19 approval from a supervisor?</p> <p>20 A We've done them that way, and that's the way I 21 was trained on the job to do it.</p> <p>22 Q At Colgan?</p>	<p>1 already two holes in the forward part of the elevator. And 2 it had access panels for it, so that's why I never 3 questioned it any further.</p> <p>4 Q Were you ultimately reprimanded for not having 5 removed the elevator to do this task?</p> <p>6 A I'm not understanding the question. From who or 7 what?</p> <p>8 Q Did Colgan ever reprimand you for not having 9 removed the el -- the elevator as Step C in this procedure 10 that is Exhibit 20?</p> <p>11 A No.</p> <p>12 Q Are you aware of anyone else being reprimanded 13 for that?</p> <p>14 A No.</p> <p>15 Q So once you removed it, you put a new actuator 16 on; correct?</p> <p>17 A Yes.</p> <p>18 Q Were you involved in the process of acquiring the 19 actuator, or was it acquired previously?</p> <p>20 A No; IT was acquired previously before I walked 21 in. So when I walked in the door, that was handed to me -- 22 you know, within an amount of reasonable time of walking in</p>

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<p>1 the door.</p> <p>2 Q Were you aware as you were installing it that --</p> <p>3 installing it that there was an open question about whether</p> <p>4 the actuator you were installing on the left-hand side was</p> <p>5 a proper match with the one on the right-hand side?</p> <p>6 A I'm not understanding when you say "match" the</p> <p>7 other side.</p> <p>8 Q Are you aware of actuators of a given part number</p> <p>9 needing to match up with a (sic) actuator of a different</p> <p>10 part number on the left- or right-hand side of the plane?</p> <p>11 Ever seen that happen before?</p> <p>12 A The same part number? Is that -- I'm sorry. I'm</p> <p>13 not still understanding your -- on part numbers.</p> <p>14 Q Do you know what the part number was of the part</p> <p>15 you put on?</p> <p>16 A No, I don't --</p> <p>17 Q Was there --</p> <p>18 A -- recall.</p> <p>19 Q Was there any discussion as you were putting it</p> <p>20 on about whether it was the right part number?</p> <p>21 A No, there was no discussions.</p> <p>22 Q Do you remember any discussion about whether the</p>	<p>1 A Yes. I've done the -- the actuator and the trim</p> <p>2 tab -- actuators up at the top on several planes.</p> <p>3 Q When you disconnect an actuator -- a trim tab</p> <p>4 actuator, the tension that was on the cable before you</p> <p>5 disconnected it would loosen up if you didn't otherwise</p> <p>6 block it down; right?</p> <p>7 A Right.</p> <p>8 Q Were you taught when you were in A and P school</p> <p>9 that to avoid slack being introduced into the rest of the</p> <p>10 cable run as you disconnect something, that you should</p> <p>11 block it to keep the tension on it?</p> <p>12 A Yes.</p> <p>13 Q And why wasn't that done here?</p> <p>14 A We didn't have the blocks. We taped it to the</p> <p>15 side of the inside of the aircraft.</p> <p>16 Q So since you didn't have blocks, you did the next</p> <p>17 best thing, which was using tape?</p> <p>18 A Right.</p> <p>19 Q In the times you had replaced trim tab actuators</p> <p>20 before on 1900Ds or Cs, had you blocked the cables then?</p> <p>21 A No.</p> <p>22 Q So you've never had the blocks available to you?</p>
Page 27	Page 29
<p>1 part being put on the other side was the right part number?</p> <p>2 A No.</p> <p>3 Q Who was involved in the right-side part number?</p> <p>4 A It was Larry Rathliff and Scott Gebauer.</p> <p>5 Q Did you guys consult with one another as you were</p> <p>6 doing essentially the same task on separate sides of the</p> <p>7 plane?</p> <p>8 A I did lean over my shoulder to ask them if they</p> <p>9 were doing okay, because I had removed a dozen before that.</p> <p>10 Q And they hadn't done it before?</p> <p>11 A I can't recall if Larry has done any because I'm</p> <p>12 not usually on his days. We only overlapped on one day, so</p> <p>13 I don't know if he ever did one, so I can't recall that.</p> <p>14 Q You say you've done a dozen of these before?</p> <p>15 A Pretty much.</p> <p>16 Q Have you replaced other actuators for other</p> <p>17 flight controls on aircraft besides trim tabs like this</p> <p>18 prior to this point in time, August of '03?</p> <p>19 A Have I did them since?</p> <p>20 Q No. Before.</p> <p>21 A Before the crash?</p> <p>22 Q Yes.</p>	<p>1 A No.</p> <p>2 Q Did you ever ask to get some?</p> <p>3 A Yes.</p> <p>4 Q Who'd you ask?</p> <p>5 A I believe it was the supervisor before Perry.</p> <p>6 Q What were you told?</p> <p>7 A The last words, I believe, were, "We'll" -- "I'll</p> <p>8 see if I can get them."</p> <p>9 Q And they just didn't?</p> <p>10 A Yeah.</p> <p>11 Q How long was that before this work in</p> <p>12 August of '03?</p> <p>13 A I can't remember.</p> <p>14 Q Have you been supplied with them since the</p> <p>15 accident?</p> <p>16 A No.</p> <p>17 Q After you replaced the left-hand actuator that</p> <p>18 first time, what did you do to rig it up and check it?</p> <p>19 A The one on the left side that --</p> <p>20 Q Yes.</p> <p>21 A -- that night?</p> <p>22 Q Yes, that night.</p>

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<p>1 can do the tension to the cables and check the rigging.</p> <p>2 Q So looking back, it -- I think it's Exhibit 4. I</p> <p>3 had it a second ago. It's probably this one.</p> <p>4 A Yes.</p> <p>5 Q Yeah. This is the maintenance work order that</p> <p>6 was filled out and completed for the replacement of the</p> <p>7 right-hand elevator that we're just now talking about;</p> <p>8 right?</p> <p>9 A Right-handed -- yes.</p> <p>10 Q Excuse me. The actuator, if I didn't say that.</p> <p>11 This does indicate the time of day you finished</p> <p>12 it, does it?</p> <p>13 A No.</p> <p>14 Q And it typically wouldn't?</p> <p>15 A Actually the date right here.</p> <p>16 Q You see the date but not the time on your shift?</p> <p>17 A No, not to time, no.</p> <p>18 Q So once you completed it, what were you doing as</p> <p>19 you waited for the guys to finish the cable work?</p> <p>20 A I don't recall, that night.</p> <p>21 Q Once they finished the cable work, did they get</p> <p>22 you to come help them with the rigging --</p>	<p>1 A He --</p> <p>2 Q -- the process.</p> <p>3 A We -- he said he was going down, and I was taking</p> <p>4 the digital protractor. And it was on the trim tab, and</p> <p>5 myself and Jeff were looking at the degrees of what it was</p> <p>6 doing. And it was deflecting in its -- within its range of</p> <p>7 degrees the way it was supposed to, where it was supposed</p> <p>8 to deflect to, and to be at zero and also on the down side</p> <p>9 of it.</p> <p>10 Q So you used a digital protractor to measure the</p> <p>11 deflection of the tab up and down?</p> <p>12 A Yes.</p> <p>13 Q And how do you set zero on a digital protractor?</p> <p>14 Q How do you figure out your baseline?</p> <p>15 A The -- the rudder has -- the elevators has been</p> <p>16 pinned in the vertical part of the tail, and then you would</p> <p>17 go from that point. I'd have to read more about it because</p> <p>18 I haven't done them in so long.</p> <p>19 Q Well, let me point out that at Step F it</p> <p>20 instructs you to use a travel board. What's a travel board</p> <p>21 as compared to a digital protractor?</p> <p>22 A The travel board gets positioned on the tail at a</p>
Page 43	Page 45
<p>1 A Yes.</p> <p>2 Q -- and the operational checks?</p> <p>3 A Yes.</p> <p>4 Q Who came to get you; do you remember?</p> <p>5 A No, I don't recall.</p> <p>6 Q Who was involved in the operational checks and</p> <p>7 rigging of the elevator trim tab system after the cable was</p> <p>8 replaced and the right-hand actuator was replaced?</p> <p>9 A Myself; Dan Kinan; and the inspector, which was</p> <p>10 Jeff Vallejo.</p> <p>11 Q Who was stationed where at the aircraft as this</p> <p>12 was done?</p> <p>13 A I was up on the tail with the inspector, and Dan</p> <p>14 was inside the plane.</p> <p>15 Q And you used the procedures in 14 for doing that</p> <p>16 again, just as you had when it bound up the time before?</p> <p>17 A Yes.</p> <p>18 Q And does a person at the back call out, "Move it</p> <p>19 all the way up"; and then the person in the -- in the</p> <p>20 cockpit does that? Is that part of the process?</p> <p>21 A We didn't -- we didn't --.</p> <p>22 Q Well, just describe --</p>	<p>1 certain point, inboard or outboard of a certain area. If</p> <p>2 you don't have that, we can use a digital protractor in</p> <p>3 place of that. I can't recall where it was found that you</p> <p>4 can use in place of the travel board.</p> <p>5 Q But your preferred tool is the travel board; is</p> <p>6 that right?</p> <p>7 A Yes.</p> <p>8 Q And did you have them available?</p> <p>9 A I -- I don't recall if we did have it or not.</p> <p>10 Q But you used a digital protractor?</p> <p>11 A Yes.</p> <p>12 Q When you use a digital protractor, do you set it</p> <p>13 on the elevator to start at zero? In other words, how do</p> <p>14 you set it to zero to begin your measuring?</p> <p>15 A I can't recall. I have to -- I haven't done it</p> <p>16 for so long. It's not on -- I know it's not on the</p> <p>17 elevator. It's actually on the trim tab it's zeroed out.</p> <p>18 Q But what you're measuring is the movement of the</p> <p>19 trim tab in relation to the elevator; is that right?</p> <p>20 A When you say "in relation to the elevator" -- the</p> <p>21 elevator's pinned at this point --</p> <p>22 Q Right. So --</p>

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<p>1 A -- to do this check.</p> <p>2 Q -- it's -- it's static. It's not supposed to</p> <p>3 move --</p> <p>4 A Right.</p> <p>5 Q -- because it's pinned; right?</p> <p>6 And what you're trying to do in this check is to</p> <p>7 determine how many degrees up from the elevator or down</p> <p>8 from the elevator the tab moves; is that right?</p> <p>9 A Right.</p> <p>10 Q So you need to start with your measuring device,</p> <p>11 which is your protractor --</p> <p>12 A Right.</p> <p>13 Q -- at a point of zero, right --</p> <p>14 A Right.</p> <p>15 Q -- which is straight out flush with the elevator.</p> <p>16 What I'm trying to ask first is: How do you make</p> <p>17 sure you're starting with a digital protractor at that</p> <p>18 point? Do you just lay it across the upper surface of the</p> <p>19 elevator and tab with its joint right there at the tab</p> <p>20 line, or do you do something else?</p> <p>21 A The trim wheel is set at zero, and the protractor</p> <p>22 is set it -- at zero also when the trim tab was called out</p>	<p>1 Q So if someone in the cockpit would announce, "I</p> <p>2 am turning it nose up" and -- you at the back are looking</p> <p>3 at what?</p> <p>4 A The trim tabs.</p> <p>5 Q And how far they go down?</p> <p>6 A I'm not recalling the -- not understanding the</p> <p>7 question when you said "down".</p> <p>8 Q Well, if he's turning the wheel up front to nose</p> <p>9 up --</p> <p>10 A Right.</p> <p>11 Q -- which way should the tab be traveling?</p> <p>12 A The tab should be -- go down.</p> <p>13 Q So has he says, "I'm turning the nose" -- "the</p> <p>14 wheel nose up," you're looking at how far -- well, first of</p> <p>15 all, whether the tab travels down; right? You're supposed</p> <p>16 to be looking at that?</p> <p>17 A Yes.</p> <p>18 Q Because if it's traveling up when he says, "I'm</p> <p>19 going nose up," you know you're backwards?</p> <p>20 A Yes.</p> <p>21 Q So you're looking at whether it's going down, and</p> <p>22 then you're also looking how far down it's supposed to go</p>
<p>1 that it's at that point on the wheel. And we would go from</p> <p>2 there and see if it deflects in the right degrees up and</p> <p>3 down --</p> <p>4 Q So in doing --</p> <p>5 A -- at that point.</p> <p>6 Q -- that, you're assuming that the trim tab -- or</p> <p>7 the trim wheel at zero means that the tab is at zero?</p> <p>8 You're -- you're banking on that relationship being</p> <p>9 accurate; right?</p> <p>10 A Yes.</p> <p>11 Q Is there anything else you do to confirm you're</p> <p>12 starting at true zero with your digital protractor, besides</p> <p>13 what you've just described?</p> <p>14 A No, I don't recall.</p> <p>15 Q Are you a pilot?</p> <p>16 A No, I'm not.</p> <p>17 Q The wheel up front has markings for nose up or</p> <p>18 nose down of the aircraft; right?</p> <p>19 A Yes.</p> <p>20 Q Do you know which direction that the trim tab</p> <p>21 travels as you turn the wheel toward nose up?</p> <p>22 A Nose up, the tabs should go down.</p>	<p>1 and whether it complies with these steps in the REPS</p> <p>2 manual?</p> <p>3 A Yes, with the digital protractor.</p> <p>4 Q And how did it check out?</p> <p>5 A Everything was in -- within its range of up and</p> <p>6 down deflection.</p> <p>7 Q And how did you confirm that it was traveling the</p> <p>8 correct direction as the wheel was moved?</p> <p>9 A I said a few times where the trim tab was, and he</p> <p>10 didn't come back to me saying that it was wrong actually.</p> <p>11 Q So you were looking to the person in the cockpit</p> <p>12 to check that issue?</p> <p>13 A He would -- he wouldn't sit in the pilot's seat.</p> <p>14 He would stand in the doorway of it; and he would come back</p> <p>15 and walk two steps out the doorway; and, you know, we'd</p> <p>16 talk -- talk that way --</p> <p>17 Q So you --</p> <p>18 A -- instead of yelling.</p> <p>19 Q -- you were within earshot then?</p> <p>20 A Yes.</p> <p>21 Q And, again, this was you, Dan, and Jeff?</p> <p>22 A Yes.</p>

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<p>1 Q Was anyone else there?</p> <p>2 A No.</p> <p>3 Q And then after that check was completed, did you</p> <p>4 sign off on Exhibit 4?</p> <p>5 (The witness reviewed document.)</p> <p>6 A Yes, I have.</p> <p>7 Q And this is an RII respection -- required</p> <p>8 inspection item? Is that what RII stands for?</p> <p>9 A Yes.</p> <p>10 Q Who did that check? Is that Jeff?</p> <p>11 A Yes, it was Jeff.</p> <p>12 Q And did he go from front to back and check what</p> <p>13 both sides of the -- what both of you were doing, or did he</p> <p>14 stay put in one location?</p> <p>15 A As we were doing travel; is that what you're --</p> <p>16 Q As you were doing the rigging and operational</p> <p>17 checks.</p> <p>18 A Yes; he stayed up on the scaffolding.</p> <p>19 Q He stayed on the back of the tail with you?</p> <p>20 A Yes.</p> <p>21 Q He wasn't in the cockpit at all?</p> <p>22 A No.</p>	<p>1 be reindexed after the actuator or cable work was done?</p> <p>2 A No, I don't recall if it was.</p> <p>3 Q Do you know what it means to reindex that wheel?</p> <p>4 A Yes, I do.</p> <p>5 Q What does that mean?</p> <p>6 A Take the wheel completely off, move the bolt,</p> <p>7 take the wheel off, and reposition it on the spline shaft,</p> <p>8 and put the bolt back on.</p> <p>9 Q Have you had to do that before?</p> <p>10 A No.</p> <p>11 Q Under what set of circumstances might that become</p> <p>12 necessary?</p> <p>13 A I don't recall any.</p> <p>14 Q Looking again at Exhibit 14, the checklist for</p> <p>15 doing the rigging to determine the proper travel and</p> <p>16 direction of the tab after this work, how far in degrees is</p> <p>17 the trim tab supposed to deflect up? And I'll refer you to</p> <p>18 Item F.</p> <p>19 (The witness reviewed document.)</p> <p>20 A The deflection should be five and a half degrees</p> <p>21 with plus half a degrees (sic) and without zero degrees</p> <p>22 minus of the up travel --</p>
Page 51	Page 53
<p>1 Q Do you know whether the electric trim was also</p> <p>2 used to test the travel and direction?</p> <p>3 A Yes, we did.</p> <p>4 Q So when he -- when whoever was up front -- when</p> <p>5 Dan was up front and was running the system, would he tell</p> <p>6 you he was doing it electrically or manually each time?</p> <p>7 A Yes, he would tell me electrically; and also you</p> <p>8 could hear the motor running in the tail part of it.</p> <p>9 Q And to your knowledge, everything checked out</p> <p>10 okay?</p> <p>11 A Yes.</p> <p>12 MR. JONES: Let's all take a break. I think I</p> <p>13 might be able to wrap up fairly quickly --</p> <p>14 MR. DOMBROFF: Okay.</p> <p>15 MR. JONES: -- if you let me do a few things.</p> <p>16 THE VIDEOGRAPHER: Off the video record at 5:46.</p> <p>17 (Whereupon, a brief recess was taken.)</p> <p>18 THE VIDEOGRAPHER: We're back on the video record</p> <p>19 at 5:52.</p> <p>20 Go ahead, sir.</p> <p>21 BY MR. JONES:</p> <p>22 Q Do you remember whether the control wheel had to</p>	<p>1 Q What --</p> <p>2 A -- of neutral.</p> <p>3 Q What does that plus one-half degree and minus</p> <p>4 zero degree mean?</p> <p>5 A The half means it can have more travel of the up</p> <p>6 deflection than it would the degrees of the down from the</p> <p>7 negative.</p> <p>8 Q So was that a margin of error, acceptable error,</p> <p>9 that they're telling you?</p> <p>10 A Yes.</p> <p>11 Q So when you did the check following the cable</p> <p>12 replacement and the act- -- and the right-hand actuator</p> <p>13 replacement, did you confirm that the trim tabs both</p> <p>14 traveled five and a half degrees up from neutral?</p> <p>15 A I can't recall the exact measure. Yes, it was</p> <p>16 within its range of that --</p> <p>17 Q So if you --</p> <p>18 A -- five and a half --</p> <p>19 Q -- were using --</p> <p>20 A -- to half.</p> <p>21 Q If were you using this REPS chapter as a</p> <p>22 reference and you were going through this list, you would</p>

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 5

COPY

Page 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

-----x
:
COLGAN AIR, INC., :
:
Plaintiff, :
:
vs. : Civil Action
: No. 1:05 cv 213
RAYTHEON AIRCRAFT COMPANY, :
:
Defendant. :
:
-----x

McLean, Virginia

Friday, June 24, 2005

Videotaped deposition of THOMAS JEFFREY VALLEJO,
witness, called for examination by counsel for the
defendant, pursuant to notice, at the offices of
Thomas B. Almy, Esq., Dombroff & Gilmore, P.C., 1676
International Drive, Penthouse, McLean, Virginia, before
Malynda D. Whiteley, a Registered Professional Reporter and
a notary public in and for the State of Virginia, beginning
at 11:43 a.m., when were present on behalf of the
respective parties:

	Page 6	Page 8
1	A Thomas Jeffrey Vallejo.	
2	Q What's your address --	
3	A 14 --	
4	Q -- residential address?	
5	A ██████████, Centerville, Massachusetts.	
6	Q Social Security number?	
7	A ██████████.	
8	Q By whom are you employed?	
9	A Colgan Air.	
10	Q What do you do there?	
11	A I'm an aircraft inspector.	
12	Q How long have you been there?	
13	A Since June of 2002.	
14	Q Have you been an aircraft inspector all that time --	
15	A Yes.	
16	Q -- with Colgan?	
17	A With Colgan.	
18	Q Give us a sketch of your history in the aviation business staring with A and P school.	
19	A I went to A and P school in 1985 and graduated in 1986 and went to work for a -- a small commuter airline.	
20		
21		
22		
	Page 7	Page 9
1	Q Where did you do your A and P training?	
2	A At Myrtle Beach, South Carolina. It was North American School of Aviation.	
3		
4	Q What made you decide to go get an A and P license?	
5	A It was kind of a family business. My father was into it; my grandfather was into it. I've been around aviation my whole life.	
6		
7		
8		
9	Q So were your father and grandfather were A and Ps?	
10	A My father was. My grandfather wasn't. My grandfather was an engineer.	
11		
12		
13	Q Before going to A and P school, were you in any other business?	
14		
15	A Automotive repair.	
16	Q So you had a mechanical background already?	
17	A Yes.	
18	Q So had you decided you're done with auto repair; you're going to move on to aviation work?	
19		
20	A Yes.	
21	Q How did you choose the particular A and P school you went to?	
22		

Page 10	Page 12
<p>1 Q And that it's moving in the proper direction for 2 the input given?</p> <p>3 A Yes.</p> <p>4 Q That's something that basically any mechanic 5 would -- went through in his training know is an important 6 thing to do?</p> <p>7 A Right, yes.</p> <p>8 Q After you got your A and P, you said you went to 9 work where?</p> <p>10 A Atlantis Airlines.</p> <p>11 Q Where's that?</p> <p>12 A It was in Florence, South Carolina.</p> <p>13 Q What did you do there?</p> <p>14 A I was mechanic started, as a -- as a junior 15 mechanic.</p> <p>16 Q What type of aircraft did you work on?</p> <p>17 A Jetstream 31s and SA-227s.</p> <p>18 Q What sort of an operation was that?</p> <p>19 (Mr. Hall entered the conference room.)</p> <p>20 A It was a commuter airline for Eastern Airlines at 21 the time, Eastern -- Eastern Express.</p> <p>22 Q So was this in the late '80s?</p>	<p>1 A I had a better job offer from CC Air operating 2 the same airplane. They were operating the Jetstream 31.</p> <p>3 Q Did they operate any Beechcraft planes there?</p> <p>4 A Yes.</p> <p>5 Q What did they operate?</p> <p>6 A The Beechcraft 99.</p> <p>7 Q Did you do work on those at all?</p> <p>8 A No.</p> <p>9 Q So you didn't go to any Beechcraft training for 10 the 99 while were you at CC?</p> <p>11 A No.</p> <p>12 Q How long were you there?</p> <p>13 A Till almost ten years.</p> <p>14 Q And why did you leave there?</p> <p>15 A Went to work for Boeing.</p> <p>16 Q Located where?</p> <p>17 A In Seattle, Washington.</p> <p>18 Q What did you do for them?</p> <p>19 A I was a functional tests technician.</p> <p>20 Q What does that involve?</p> <p>21 A I was on Slant 3 of the 747 final assembly. I 22 was in hydraulics.</p>
Page 11	Page 13
<p>1 A Yeah.</p> <p>2 Q How long were you there?</p> <p>3 A I was there -- I don't remember the exact time 4 frame. A year to eighteen months, two years at the most.</p> <p>5 Q So when you started there, did they put you 6 through any other specific training?</p> <p>7 A Yeah, I went to the factory school for the 8 engines, to Garrett.</p> <p>9 Q The engines that were on the planes they were 10 operating?</p> <p>11 A Right. I went to Garrett.</p> <p>12 Q What about any training for air frame that they 13 were flying?</p> <p>14 A No, didn't go to the air frame training.</p> <p>15 Q Did they fly any Beechcraft products there?</p> <p>16 A No.</p> <p>17 Q Where did you go when you left there?</p> <p>18 A I went to CC Air.</p> <p>19 Q Where are they?</p> <p>20 A They were in -- Hickory, North Carolina, was the 21 maintenance facility.</p> <p>22 Q Now, why did you leave the first place?</p>	<p>1 Q How did you get hooked up with that job?</p> <p>2 A I met a guy in a laundromat, believe it or not.</p> <p>3 Q Really?</p> <p>4 A Sure did.</p> <p>5 Q Someone from Boeing?</p> <p>6 A Yes. Retired functional test engineer that was 7 in a laundromat. And I had -- I went to -- I was working 8 with CC Air and went to work -- actually went to work for 9 B.F. Goodrich, what which Tramco at the time. It was a -- 10 a large airplane depot maintenance facility.</p> <p>11 And that's what brought me to Seattle, but I had 12 every intention of going to work for Boeing. That's where 13 my focus was. And I had to take this job until my Boeing 14 job opened up. I was going to get into Boeing one way or 15 another.</p> <p>16 But I met this guy in a laundromat. And he asked 17 me, you know, what I -- he saw the uniforms that I had. 18 And we got into a discussion about aviation, and he said 19 that retired from Boeing and that he knew people there that 20 could maybe something, give him my name and Social Security 21 number. And two days later I got a call from Boeing.</p> <p>22 Q So that's what got you interested in Boeing,</p>

Page 14	Page 16
<p>1 or were you already thinking --</p> <p>2 A No, I was already thinking Boeing.</p> <p>3 Q Oh.</p> <p>4 A Oh, yeah. I was already going out to Seattle to</p> <p>5 go work for Boeing. I had it in my mind to work to big</p> <p>6 airplanes.</p> <p>7 Q And was that your purpose or reason for thinking</p> <p>8 of going to Boeing; you wanted to work on big planes?</p> <p>9 A Right, yeah.</p> <p>10 Q And how long did you work for Boeing?</p> <p>11 A I worked for Boeing for about 15 months.</p> <p>12 Q And why did you leave there?</p> <p>13 A Well, the impending layoffs where everything</p> <p>14 started going downhill. Boeing just started -- started</p> <p>15 laying off and laying off, and the line number started</p> <p>16 getting smaller and smaller, which meant that their --</p> <p>17 their orders were being canceled.</p> <p>18 Q Was this in the wake of 9/11?</p> <p>19 A No, this was before 9/11.</p> <p>20 Q So then what did you do?</p> <p>21 A I went to work for Horizon Air.</p> <p>22 Q Where is that?</p>	<p>1 but to move back to the south.</p> <p>2 Q Cloudy in Seattle, isn't it?</p> <p>3 A Yeah, it was cloudy and rainy.</p> <p>4 Q Kind of -- kind of dreary?</p> <p>5 A And she grew up her whole -- spent her whole life</p> <p>6 in the South, and it just really took a toll on her. She</p> <p>7 went into a major depression.</p> <p>8 We tried everything; doctor, psychologist. We</p> <p>9 went and got light therapy and all kinds of stuff. It just</p> <p>10 didn't work out.</p> <p>11 Q So headed back where?</p> <p>12 A I went back to North Carolina.</p> <p>13 Q So did you line up a job back in -- in this area</p> <p>14 before you headed back over here?</p> <p>15 A No. I had intentions of finding a job when I got</p> <p>16 back here -- or back in -- in North Carolina.</p> <p>17 Q Where did you find a job in North Carolina?</p> <p>18 A I looked in North Carolina and ended up working</p> <p>19 for Mesa Airlines in Birmingham, Alabama.</p> <p>20 Q When did that begin?</p> <p>21 A In November of '99, November of '99.</p> <p>22 Q How long were you with Mesa?</p>
<p style="text-align: center;">Page 15</p> <p>1 A In Seattle, Washington.</p> <p>2 Q Doing what?</p> <p>3 A I was a line mechanic there, doing line</p> <p>4 maintenance.</p> <p>5 Q Working on what type of aircraft?</p> <p>6 A Dash 8s and F28 Focker -- F28 Focker.</p> <p>7 Q What sort of operation did they run?</p> <p>8 A They were a commuter airline.</p> <p>9 Q Did you work on any Beechcraft airplanes there?</p> <p>10 A No, they didn't have any Beechcraft.</p> <p>11 Q Did you undergo any additional aircraft-specific</p> <p>12 training while at that operation?</p> <p>13 A Yes.</p> <p>14 Q Just for the ones you worked on there?</p> <p>15 A Yes.</p> <p>16 Q How long were you there?</p> <p>17 A I was there about 15 months.</p> <p>18 Q Why did you leave there?</p> <p>19 A My wife at the time became diagnosed with -- I</p> <p>20 can't remember the exact terminology of it, but she</p> <p>21 couldn't stand the weather. Depression, clinical</p> <p>22 depression is exactly what it was. And we had no choice</p>	<p style="text-align: center;">Page 17</p> <p>1 A Almost two years.</p> <p>2 Q What type of aircraft did you work on there?</p> <p>3 A Canadair regional jet and the Embraer regional</p> <p>4 jet.</p> <p>5 Q Did you work on any Beechcraft aircraft there?</p> <p>6 A No.</p> <p>7 Q Were you -- you were a mechanic there, I take it?</p> <p>8 A No, I was an inspector there.</p> <p>9 Q When did you achieve inspector status along your</p> <p>10 career progression?</p> <p>11 A The first year I was with CC Air.</p> <p>12 Q And did you remain an inspector at each place you</p> <p>13 went to thereafter?</p> <p>14 A No.</p> <p>15 Q Where were you not an inspector?</p> <p>16 A I was not an inspector at Boeing, and I was not</p> <p>17 an inspector at Tramco, and I was not an inspector at</p> <p>18 Horizon.</p> <p>19 Q And why did you leave Mesa?</p> <p>20 A I left Mesa over an -- an incident that happened</p> <p>21 and the CRJ, and me and the director of quality of</p> <p>22 assurance didn't agree on the -- on the cause, so I -- I</p>

Page 18	Page 20
1 resigned.	1 the Beech, airworthiness release training, ground handling
2 Q What happened?	2 training, avionics Phase I.
3 A It was an overflight of a door, a repair on a	3 Q So what did Phase 1 consist of for the Beech?
4 door that was supposed to repaired, and it overflowed by	4 And that was -- and that was specific to the 1900; is that
5 5,000 hours.	5 right?
6 Q Was there an incident or accident associated with	6 A Yes.
7 this?	7 Q What did that involve? Did you do it at Colgan,
8 A No.	8 did you go somewhere for it, or what?
9 Q It's just a -- something overflow its incremental	9 A We did it at Colgan.
10 time for some work?	10 Q Who taught it?
11 A Right.	11 A They brought a guy in from -- a contractor. I
12 Q And did the company or someone at the company	12 can't remember his exact name, who did it.
13 purport to lay that problem at your feet?	13 Q And was it much like the other training you had
14 A Yeah, that's pretty much how it happened, yeah.	14 gotten at other places you worked as far as being
15 Q And you disagreed that?	15 aircraft-specific?
16 A I disagreed with it.	16 A Yes.
17 Q So you left?	17 Q It just gets you familiar with that particular
18 A So I left.	18 air flame and its fire plan (phonetic)?
19 Q Where did you go?	19 A Yes.
20 A I went to Colgan Air.	20 Q And then working on up the through the rest of
21 Q When was that?	21 this, you got as far as requalification airworthiness
22 A In June of 2002.	22 release July '03?
Page 19	Page 21
1 (The training record was marked Defendant's	1 A Right.
2 Exhibit No. 39 for identification.)	2 Q That's the last item shown here. Is that right?
3 BY MR. JONES:	3 A Yes.
4 Q Sir, I'm handing you what we've marked Exhibit	4 Q Other than what's listed here, are you aware of
5 39. This is a document that was produced by counsel for	5 any other formal maintenance you -- or excuse me -- formal
6 Colgan in response to requests that Raytheon made for	6 training you received while working at Colgan?
7 documents associated with the mechanics' employment.	7 A Yeah, the Phase -- the Phase IIs are not on here
8 And we've seen this document for basically	8 for the -- for the Beech and the Saab.
9 everybody, and it seems to track the training that you	9 Q When did they happen?
10 received while at Colgan. It also typically seems to start	10 A I don't remember the exact dates, but somewhere
11 about the time you began working there.	11 in 2003. It was about a year -- I was there about a year
12 And it works actually from the bottom up.	12 and had been transferred to the Hyannis base from Manassas,
13 A Oh, okay.	13 and I was in Manassas about six months.
14 Q Do you recognize this document as that type of	14 Q What do you learn at the Phase II step of the
15 thing?	15 training as distinct from what they teach at the Phase I?
16 A Yes.	16 A It's -- it's a little more in-depth systems
17 Q Does that track with your recollection of when	17 rather than just standard air framing. It goes into
18 you started with Colgan?	18 in-depth -- in-depth about systems.
19 A Yes.	19 Q And do you remember that the air -- the
20 Q And what sort of training did you get while at	20 maintenance that was done on this aircraft preceding the
21 Colgan? And you can use that as a guide if you need to.	21 accident was performed in August of 2003?
22 A Well, I got the initial Phase I for the Saab and	22 A I don't understand. Say that again.

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<p>1 Q Well, I'm trying to get -- find out if you have 2 an independent recollection of when the maintenance was 3 performed on the accident aircraft before the accident 4 happened.</p> <p>5 A 2003. Oh, yeah.</p> <p>6 I'm still not following to question. It's --.</p> <p>7 Q Do you know when -- when did the accident occur; 8 do you know?</p> <p>9 A I don't remember the exact date. August, August 10 of 2003. Yeah, okay, in August of 2003.</p> <p>11 Q And what's your recollection of when the 12 maintenance was done on the plane before the accident? Was 13 it immediately before, days before, weeks before, or what?</p> <p>14 A Days before.</p> <p>15 Q And we'll get more detail into this as we talk.</p> <p>16 But just give me a thumbnail sketch of what your role was 17 in the maintenance on Aircraft 240 in the days preceding 18 the accident.</p> <p>19 A My job was to basically perform the ins--</p> <p>20 the -- the inspection, the Number Six detail that was due 21 on that airplane.</p> <p>22 Q And describe briefly for us what a Number Six</p>	<p>1 A Right.</p> <p>2 Q So before August of 2003 had you performed 3 services as an inspector of work on 1900D aircraft?</p> <p>4 A No.</p> <p>5 Q Was August of 2003 the first time you were 6 serving?</p> <p>7 A Oh, no. The first time that I inspected worked 8 as the inspector on the 1900Ds is when I was hired with 9 Colgan.</p> <p>10 Q So you did that from the get-go?</p> <p>11 A From the get-go; right.</p> <p>12 Q Even before you took the Phase I.</p> <p>13 A Phase 1 was on my hire date. When I was hired, I 14 had to go to the Phase 1 class before we even started on 15 the floor, before I even went to work.</p> <p>16 Q So you had completed the Phase 1 before you did 17 any services as an --</p> <p>18 A Right--</p> <p>19 Q --inspector of work?</p> <p>20 A --right. I went through the Phase 1 with the 21 chief inspector and lead inspector; right.</p> <p>22 Q So for that full year and month or two leading up</p>
Page 23	Page 25
<p>1 Q detail inspection is.</p> <p>2 A It comprises of inspection of the tail of the 3 airplane, the empennage.</p> <p>4 Q And it's a regularly scheduled inspection?</p> <p>5 A Right, regularly scheduled inspection.</p> <p>6 Q Comes due at a given increment of hours flown --</p> <p>7 A Yes.</p> <p>8 Q -- or cycles?</p> <p>9 A Yes.</p> <p>10 Q So the Detail Six came due on Aircraft 240, and 11 it got listed on your schedule of maintenance. It came up, 12 and you were assigned to be the inspector for that work?</p> <p>13 A Yes.</p> <p>14 Q Who actually performed the Detail Six?</p> <p>15 A I did some of it, and Dan Kinan did some of it.</p> <p>16 Q And then for the work that followed the Detail 17 Six itself, what was your general role?</p> <p>18 A To ensure that it was done satisfactorily.</p> <p>19 Q But not necessarily to perform the tasks 20 yourself?</p> <p>21 A No, not to perform the task myself.</p> <p>22 Q You were an inspector of other mechanics' work?</p>	<p>1 Q to the accident, you were serving as a -- as an inspector 2 on work on 1900Ds?</p> <p>3 A Right.</p> <p>4 Q As of the service performed on 240 in late August 5 2003, you had not yet completed your Phase II training on 6 the 1900D, had you?</p> <p>7 A No.</p> <p>8 Q Is there any requirement within Colgan's GMM that 9 inspectors inspecting the work of mechanics on a given 10 aircraft need to first complete both phases of that 11 aircraft's training?</p> <p>12 A I don't know. I don't remember. I'd have to 13 look at the GMM.</p> <p>14 Q But in any event, you were being -- you were 15 serving as an inspector without having gotten the second 16 half of the 1900 specific training; correct?</p> <p>17 A I think so, yeah.</p> <p>18 Q Do you remember when you completed the --</p> <p>19 A No.</p> <p>20 Q -- or took the --</p> <p>21 A I --</p> <p>22 Q -- the Phase II?</p>

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<p>1 A -- can't remember the exact date of the Phase II.</p> <p>2 Q Are you a pilot?</p> <p>3 A Yes.</p> <p>4 Q What ratings do you hold?</p> <p>5 A Just a private pilot license.</p> <p>6 Q Besides your A and P and your private pilot's license, do you hold any other certifications in the aviation field?</p> <p>7 A No.</p> <p>10 Q Have you ever had any enforcement actions against you as an airman?</p> <p>12 A No.</p> <p>13 Q Never had --</p> <p>14 A Not until this incident.</p> <p>15 Q What -- we'll talk about it now. What -- what specific enforcement action was instituted against you as a result of this situation?</p> <p>18 A Certificate suspension for 30 days.</p> <p>19 Q And the reason was?</p> <p>20 A Failure to follow maintenance manual procedures.</p> <p>21 Q And specifically what maintenance manual procedures were not followed?</p>	<p>1 Q Do you then take a test?</p> <p>2 A I took a couple of tests. I can't remember if they were GMM-specific. I just -- I just don't remember if they were GMM-specific. But they gave us a couple of tests.</p> <p>6 Q But you completed your training of the GMM --</p> <p>7 A Yeah.</p> <p>8 Q -- satisfactorily?</p> <p>9 A Yes.</p> <p>10 Q Do inspectors have to get more familiar with the GMM than regular mechanics?</p> <p>12 A No.</p> <p>13 Q Explain briefly the work card system in place at Colgan.</p> <p>15 A The work cards are a series of written instructions to perform certain tasks.</p> <p>17 Q Now, is there a work card at Colgan for every single task done on every airplane?</p> <p>19 A No.</p> <p>20 Q Is it typical that you have a work card for things that occur over and over as opposed to rare repairs?</p> <p>22 A Yes.</p>
Page 27	Page 29
<p>1 A The removal of the elevator for installation of the trim tab actuator.</p> <p>3 Q Was there any other aspect of -- or was there any other reason given for your suspension, other than the failure to make sure that step occurred, removal of the elevator?</p> <p>7 A No.</p> <p>8 Q None of it had anything to do with the cable work?</p> <p>10 A No.</p> <p>11 Q It had nothing to do with the proper performance of the operational check following --</p> <p>13 A No.</p> <p>14 Q -- the work --</p> <p>15 A No.</p> <p>16 Q -- on the plane?</p> <p>17 Q When you got to Colgan, did you have to become familiar with their GMM?</p> <p>19 A Yes.</p> <p>20 Q And how did you go about doing that?</p> <p>21 A I went through a training class with the director of quality assurance.</p>	<p>1 Q Who at Colgan is in charge of creating the work cards?</p> <p>3 A The --</p> <p>4 (Proceedings participants speaking at the same time.)</p> <p>5 MR. ALMY: Objection. Excuse me. Objection.</p> <p>6 Now or --</p> <p>7 MR. JONES: I'm asking how -- I'm asking now, but I'll for a separate time frame.</p> <p>9 A The director -- director of quality control.</p> <p>10 BY MR. JONES:</p> <p>11 Q So whoever had that at the various times throughout the history of the company would be the one responsible for that?</p> <p>14 A Right.</p> <p>15 Q Who has that role now?</p> <p>16 A I would still say the director of quality control.</p> <p>18 Q What person holds that position?</p> <p>19 A Tony -- I can't pronounce his last name. Galub (phonetic). I'm not sure how to pronounce his last name.</p> <p>21 Q During time you joined Colgan up to the date of the accident, who held that position?</p>

Page 42	Page 44
<p>1 A -- him up --</p> <p>2 Q -- and said --</p> <p>3 (Proceedings participants speaking at the same time.)</p> <p>4 A It's small company; it's easy to pick up the</p> <p>5 phone and say, Hey, look I saw this or -- or that.</p> <p>6 Q And then do you try and -- and make sense of it</p> <p>7 together and go on, or do you need to take some other</p> <p>8 action when that happens?</p> <p>9 A We try to make sense of it together, what the</p> <p>10 best route of action is.</p> <p>11 Q And if you find a discrepancy that caused you</p> <p>12 some confusion, do you typically also inform the</p> <p>13 manufacturer that publishes the manual?</p> <p>14 A No, I don't.</p> <p>15 Q Do you know whether the company typically does?</p> <p>16 A No, I don't know if they do or not.</p> <p>17 Q So you personally have never informed, for</p> <p>18 example, Raytheon that you found a problem in one of its</p> <p>19 maintenance manuals?</p> <p>20 A No.</p> <p>21 Q Have you had interaction directly with tech</p> <p>22 support at Raytheon?</p>	<p>1 A Yeah.</p> <p>2 Q And did you actually do that there?</p> <p>3 A No.</p> <p>4 Q When you saw it being done, what did you</p> <p>5 understand its purpose to be?</p> <p>6 A To keep the cables in place.</p> <p>7 Q And if you didn't keep them in place, what</p> <p>8 problems might arise?</p> <p>9 A They could fall off the pulley.</p> <p>10 Q Have you ever seen -- seen that done at Colgan,</p> <p>11 blocking the cables?</p> <p>12 A No.</p> <p>13 Q Have you ever heard the topic discussed at</p> <p>14 Colgan?</p> <p>15 A Yes.</p> <p>16 Q When?</p> <p>17 A After this incident.</p> <p>18 Q But not prior to?</p> <p>19 A No.</p> <p>20 Q Has Colgan instituted a practice of blocking</p> <p>21 cables since the accident?</p> <p>22 A Yes.</p>
Page 43	Page 45
<p>1 A No.</p> <p>2 Q You've not spoken with anyone there?</p> <p>3 A No, not -- no, I really don't.</p> <p>4 Q Who typically has communications with tech</p> <p>5 support when questions arise?</p> <p>6 A The supervisor on duty.</p> <p>7 Q Do you work the day shift or the night shift?</p> <p>8 A Night shift.</p> <p>9 Q Still?</p> <p>10 A Still.</p> <p>11 Q When you were in A and P school, were you taught</p> <p>12 about the practice of blocking cables to keep tension on</p> <p>13 them before you disconnects a part so that all of the</p> <p>14 downstream run of the cable keeps tight?</p> <p>15 A No.</p> <p>16 Q You were never taught that?</p> <p>17 A No.</p> <p>18 Q Have you ever seen that done?</p> <p>19 A Yes.</p> <p>20 Q Where?</p> <p>21 A In the manufacturing plant at Boeing.</p> <p>22 Q At Boeing?</p>	<p>1 Q Who instituted that practice?</p> <p>2 A The director of quality control.</p> <p>3 Q How was that change implemented?</p> <p>4 A How was it implemented?</p> <p>5 Q Was it put in the GMM?</p> <p>6 A I don't know if it was written in the GMM or not.</p> <p>7 But he specifically told me on the phone that it would be</p> <p>8 done.</p> <p>9 Q And why was he explaining to you it was needing</p> <p>10 to be done?</p> <p>11 A Why was he explaining? That's what he wanted</p> <p>12 done.</p> <p>13 Q Well, what was your understanding as to why</p> <p>14 blocking was now determined to be a good practice?</p> <p>15 A Well, that's something that they said that they</p> <p>16 had called for in the maintenance manual and that they</p> <p>17 wanted done. They wanted the maintenance manual followed</p> <p>18 letter for letter.</p> <p>19 Q So Colgan's decision to begin blocking was in</p> <p>20 response to a change in the maintenance manual to</p> <p>21 specifically call for it as well?</p> <p>22 A I'm not following you there.</p>

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<p>1 A No.</p> <p>2 Q Well, what would you do, then?</p> <p>3 A I would go up and look at the job that he completed --</p> <p>5 Q And --</p> <p>6 A -- to make sure that it was -- the presentation was right.</p> <p>8 Q Everything looked in --</p> <p>9 A Everything --</p> <p>10 Q -- place?</p> <p>11 A -- looked in place, everything looked right.</p> <p>12 Q Would you have done any sort of rigging or operational check to see that it was operating properly?</p> <p>14 A Yes.</p> <p>15 Q And what does that involve?</p> <p>16 A Looking for whatever the maintenance manual called out for.</p> <p>18 Q So in that instance you would have looked at the page of -- of the maintenance that would tell you how to do --</p> <p>21 A Yes --</p> <p>22 Q -- that --</p>	<p>1 actuator and that the travel was longer than the cable had allowed and it caused the cable to come off the drum.</p> <p>3 Q The travel was longer than the cable had allowed.</p> <p>4 What does that mean?</p> <p>5 A On the actuator. It moved -- it moved more -- I can't remember if it was more or less that caused -- something that actuator -- in that right-hand actuator caused the cable to come off the drum.</p> <p>9 Q Who had formed that opinion?</p> <p>10 A Perry Sarluca.</p> <p>11 Q Did he tell you it had something to do with the -- the differential in travel limits, one side to the other?</p> <p>14 A Not until after they called Raytheon and Raytheon told them that that was going -- that's what would happen if that actuator was put in there.</p> <p>17 Q And who called Raytheon?</p> <p>18 A Perry.</p> <p>19 Q Were you at all involved in the previous discussions with Raytheon about whether a dash 6 and a dash 7 could be used together?</p> <p>22 A No.</p>
<p>1 (Proceedings participants speaking at the same time.)</p> <p>2 A -- the maintenance manual would already be there.</p> <p>3 It's there from the start of the job to completion. The maintenance manual's available.</p> <p>5 Q Do you remember doing or being present for the rigging and operational check of the elevator trim tab system after the first two actuators were replaced?</p> <p>8 A No.</p> <p>9 Q Were you present or involved in the rigging and operational check of that system after the front cable was replaced and the left ac -- or excuse me -- the right actu -- actuator was replaced the second time?</p> <p>13 A Yes.</p> <p>14 Q Were you involved at all in the process of replacing the forward cable system?</p> <p>16 A Yes.</p> <p>17 Q What was your role there?</p> <p>18 A I looked at the job after it was completed.</p> <p>19 Q When you looked over the forward cable replacement job, what was your understanding as to why that cable had to be replaced in the first place?</p> <p>22 A They told me that they had replaced the trim tab</p>	<p>1 Q But by the time you participated in the functional check and the rigging check after the cable and the right-hand was replaced again, you learned that Raytheon had reported back that, No, you can't pair those two together; you have to pair dash 7 and dash 9; right?</p> <p>6 A Right.</p> <p>7 Q Now, you mentioned that you thought that someone at Raytheon had said that there was something about the dash 6 right-hand actuator that would cause it to come off the drum.</p> <p>11 Q Were you -- were you directly involved in those communications with Raytheon?</p> <p>13 A No.</p> <p>14 Q You didn't speak with Raytheon, did you?</p> <p>15 A No.</p> <p>16 Q Who did?</p> <p>17 A Perry Sarluca.</p> <p>18 Q And who did you hear from that Raytheon had said something like this?</p> <p>20 A Perry Sarluca.</p> <p>21 Q What precisely did Perry tell you that he had heard?</p>

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<p>1 aspect of the work; and then when the other finished, you'd 2 check their aspect of work; and then after you checked both 3 of those visually, you would be do the operational check?</p> <p>4 Would that be the order?</p> <p>5 A Yes.</p> <p>6 Q Who was present for the operational check?</p> <p>7 A Dan Kinan, Dominick, and myself.</p> <p>8 Q And where were each of you positioned around the 9 aircraft?</p> <p>10 A Dominick and I were on the tail, and Dan was in 11 the cockpit.</p> <p>12 Q And how did the check go?</p> <p>13 A It went -- it went perfect. The numbers were 14 right on the money.</p> <p>15 Q And what did you do use, a travel board or a 16 digital protractor?</p> <p>17 A We used a digital protractor.</p> <p>18 Q And who operated that?</p> <p>19 A Dominick did.</p> <p>20 Q And were you looking over his shoulder to check 21 the readings?</p> <p>22 A Yeah, I was watching the numbers.</p>	<p>1 Q So what does a variation in temperature do to the 2 system?</p> <p>3 A It's going to change the tension that's applied 4 in the cable.</p> <p>5 Q Will it change the extent of travel of the flight 6 control surface?</p> <p>7 A I don't know if it would or not. I would think 8 it would.</p> <p>9 Q Did you check the stops on the cable to see where 10 they were located as a part of your inspection work?</p> <p>11 A Yes.</p> <p>12 Q What did you do to check those?</p> <p>13 A We visually inspected them.</p> <p>14 Q Is there anything you could do to make sure they 15 were in the right spot along the cable?</p> <p>16 A No.</p> <p>17 Q Were you just looking to see that they were 18 there?</p> <p>19 A To see that there were there, yes.</p> <p>20 Q Would they have been taken off as a part of this 21 work?</p> <p>22 A I don't think they were because they were on the</p>
<p style="text-align: center;">Page 71</p> <p>1 Q Were you holding Exhibit 14 to know the numbers?</p> <p>2 A We had already established the numbers previously 3 from reading the maintenance manual and knew what we were 4 looking for.</p> <p>5 Q What sort adjustments do you make for temperature 6 in the -- in the hangar when you do this?</p> <p>7 A I'm not following you. I mean --</p> <p>8 Q On the front page here there's a chart that 9 has --</p> <p>10 A Uh-huh.</p> <p>11 Q -- temperatures against pounds of tension.</p> <p>12 A Uh-huh.</p> <p>13 Q And I believe it was Dominick yesterday was 14 trying to explain to us how you needed to find out what the 15 temperature was in the hangar because it could impact this 16 test.</p> <p>17 A Right.</p> <p>18 Q How does that work?</p> <p>19 A We used a digital thermometer placed in the belly 20 of the airplane, and that will tell us what the 21 temperature -- that ambient temperature is, and then we use 22 the chart corresponding to that.</p>	<p style="text-align: center;">Page 73</p> <p>1 upper end of tail and the cable that was changed was in the 2 forward end.</p> <p>3 Q When you were inspecting the work done on the 4 actuator, were you aware that the step calling for the 5 removal of the elevator had been skipped?</p> <p>6 A Yes.</p> <p>7 Q Did you discuss that with your mechanics --</p> <p>8 A No.</p> <p>9 Q -- as you were doing the inspection?</p> <p>10 A No.</p> <p>11 Q But you knew they had skipped that?</p> <p>12 A Yes.</p> <p>13 Q And you were okay with that?</p> <p>14 A Yes.</p> <p>15 Q And why is that it was okay, in your mind, to 16 skip that?</p> <p>17 A That's the way we had been shown how to do it.</p> <p>18 Q By whom?</p> <p>19 A By the other mechanics. And -- and -- and when I 20 came -- when I started in Manassas, that's the way that we 21 were showed (sic) how to do it in Manassas by the 22 supervisor then.</p>

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<p>1 Q When you were first shown how to do it by leaving 2 the elevator in place, did you raise a question of, "Hey, 3 you know, this is a step in the maintenance manual. 4 Shouldn't we be doing it?" 5 A No. 6 Q You just figured since that's the way they did it 7 at Colgan, it was okay to skip that step? 8 A Yeah. 9 Q So you and Dominick were at the back; dan was in 10 the front. 11 Would one or the other you say, "Either move it 12 this way," or, "I'm moving it this way," you know, "Which 13 way is it going?" 14 MR. ALMY: Object to the form of the question. 15 BY MR. JONES: 16 Q It's a poor question, but what I'm trying to 17 filling out is: Who was leading the check? 18 A I don't remember. I don't remember who was 19 actually leading it. 20 Q Would you have been actively involved -- 21 A Yes -- 22 Q -- in that?</p>	<p>1 A Right. 2 Q So you move it over to the tab? 3 A Right. 4 Q So it knows now it's moving in relation to this 5 spot over here? 6 A Right. 7 Q It goes up or down and measures degrees -- 8 A Yes. 9 Q -- change? 10 Is there a particular place along the tab that 11 you set it? At the outer edge, at the front edge, in the 12 middle? 13 A In the middle. 14 Q Do you clamp it down, or do you hold it down with 15 your finger? 16 A It's taped. 17 Q Were travel boards available? 18 A Not to my knowledge. 19 Q Are you familiar with the use of travel boards? 20 A Yes. 21 Q Is there a reason that the digital protractor was 22 used instead of the travel boards?</p>
<p>1 A -- but I wouldn't say that I was leading it. I 2 would think that Dan would have prob- -- more -- more 3 likely than not Dan would have been leading it. I'm 4 witnessing it. 5 Q How -- how was the digital protractor set to its 6 near zero or neutral position? 7 A In Reference to the elevator, set pins at zero. 8 Q So you set the digital protractor on what? 9 A The elevator. 10 Q The elevator itself or the tab? 11 A The elevator itself. 12 Q And then how does it measure movement of the tab? 13 A How does what -- the protractor? 14 Q Yeah. How does it see movement and register it? 15 A Then you move the protractor onto the tab and 16 operate the tab, and it -- the protractor moves with the 17 tab in preference to the elevator. 18 Q Okay. So you first set it on the elevator to get 19 it to understand the top of the elevator is a fixed surface 20 at that point because it's pinned? 21 A Right. 22 Q It's zero; right?</p>	<p>1 A I don't know why the difference was. I don't 2 know why. 3 Q Have you used travel boards before? 4 A Yes. 5 Q Do you find them understandable? 6 A Yes. 7 Q Relatively easy to use? 8 A No. 9 Q What's difficult about their use? 10 A In the placement on the surface in the actual 11 reading that you're going to get can vary depending on the 12 angle that you're looking at the travel board in reference 13 to the control surface as much as a couple of degrees. 14 It's not as accurate. 15 Q And have you found that be to the case with 16 travel boards on elevator trim tabs or on other surfaces? 17 A It would apply to all surfaces, not any one 18 specific. 19 Q So that same issue exists, in your mind, with all 20 travel boards? 21 A Well, yeah, yeah. 22 Q So when you're doing this check after the forward</p>
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<p>1 cable and the right-hand actuator was replaced again, 2 you're in the back with Dominick, Dan's up front. 3 How many times was it run through its full range 4 of motion?</p> <p>5 A I don't remember the exact number of times.</p> <p>6 Q Was someone holding the list that is the Exhibit 7 14 to note steps?</p> <p>8 A No.</p> <p>9 Q Were you and Dominick up on scaffold?</p> <p>10 A Yes.</p> <p>11 Q You need be up there to meet and see that tail, 12 don't you?</p> <p>13 A Right.</p> <p>14 Q It's way up in the air?</p> <p>15 A Right.</p> <p>16 Q But in your recollection was -- was it run 17 through its full travel more than once?</p> <p>18 A Yes.</p> <p>19 Q Would you call it several times?</p> <p>20 A Yes.</p> <p>21 Q And it checked out as far as the degrees each 22 direction; correct?</p>	<p>1 A Right.</p> <p>2 Q As well as making sure it's going as far as it's 3 supposed to go?</p> <p>4 A Right.</p> <p>5 Q So how is it that you confirmed that the elevator 6 trim tab was moving in the right direction given -- given 7 the input?</p> <p>8 A I couldn't because I wasn't in the cockpit.</p> <p>9 Q Were you leaving that to Dan --</p> <p>10 A Yeah --</p> <p>11 Q -- to do?</p> <p>12 A -- yeah, that would have been up to Dan.</p> <p>13 Q Were you and Dominick in the back indicating what 14 you were seeing in terms of it being -- going up or down, 15 the tab?</p> <p>16 A Yes.</p> <p>17 Q Such that Dan could hear you?</p> <p>18 A Yes.</p> <p>19 Q And how did you report that? Just yell it at 20 him?</p> <p>21 A Yeah, yes, yelling it at him.</p> <p>22 Q And he confirmed, said, "Okay. I got that"?</p>
Page 79	Page 81
<p>1 A Yes.</p> <p>2 Q And it checked out in terms of moving in the 3 proper direction given the input given at the wheel; right?</p> <p>4 A I wasn't in the cockpit; I didn't see that.</p> <p>5 Q Did Dan say, "I'm going nose up"; and, therefore, 6 you confirm that the tab's traveling in the proper 7 direction?</p> <p>8 MR. ALMY: Object to the form again.</p> <p>9 A No, I can't say that either. I don't remember</p> <p>10 him saying that.</p> <p>11 BY MR. JONES:</p> <p>12 Q So how is it that you confirmed that the tabs 13 were moving in the proper direction given the input 14 provided?</p> <p>15 A We didn't know -- we were measuring -- we were</p> <p>16 looking for travel. We were measuring for travel</p> <p>17 distance -- is what our primary focus was on --</p> <p>18 Q When you finish --</p> <p>19 A -- moving the control surfaces.</p> <p>20 Q When you finished work on a flight control 21 systems, you want to do a check to make sure that the 22 surface is moving to the right direction, don't you?</p>	<p>1 A Right.</p> <p>2 Q And then you move it again to check a different 3 form of travel?</p> <p>4 A Right, the opposite direction.</p> <p>5 Q Was it electrically for the same purpose?</p> <p>6 A Yes.</p> <p>7 Q You're aware that the NTSB ultimately concluded 8 that the cable was rigged in such a way it caused the 9 system to operate backwards; right?</p> <p>10 A Yes.</p> <p>11 Q If the cable was rigged in such a way it caused 12 the system to operate backwards and you ran the systems 13 through its paces using its electrical motor and you took 14 the electric motor and went nose up, what would the wheel 15 be doing for the manual system?</p> <p>16 MR. ALMY: I'm going to object to the form of 17 that.</p> <p>18 If you understand it, you can -- he can answer 19 it.</p> <p>20 BY MR. JONES:</p> <p>21 Q Do you --</p> <p>22 A Yeah --</p>

Page 82	Page 84
<p>1 Q -- understand?</p> <p>2 A -- yeah.</p> <p>3 When you're moving the -- the trim switch up, 4 the -- the trim wheel's going to be moving forward.</p> <p>5 Q Forward?</p> <p>6 A Towards forward. It's toward the front of the 7 airplane.</p> <p>8 Q Even if the cable is rigged such that the manual 9 system's running backwards?</p> <p>10 A I wouldn't know what it would do if it was 11 running backwards.</p> <p>12 Q Do you agree or disagree with the NTSB that the 13 cable was rigged such that the system operated backwards?</p> <p>14 A I disagree.</p> <p>15 Q So given the checks you did, you're confident 16 that it was operating properly not only as far as the 17 extent of travel but the proper direction of travel?</p> <p>18 A Yes.</p> <p>19 Q After the accident did you have conversations 20 with Dan or Scott or Dominick about whether there could be 21 any question on that topic?</p> <p>22 A Yes.</p>	<p>1 We didn't -- at that point it was pure 2 speculation on what had happened to that airplane. We had 3 no idea what had happened to that airplane. We were 4 looking for something totally different than what was 5 found.</p> <p>6 Q What were you thinking it might be?</p> <p>7 A We were thinking it was some type of engine 8 problem that he had had with the airplane.</p> <p>9 But the thing was they kept saying something 10 about a runaway rudder -- a runaway trim is what they said, 11 that he said on the radio.</p> <p>12 Q Which would have meant what?</p> <p>13 A I have no idea what that would mean --</p> <p>14 Q Do --</p> <p>15 A -- to me.</p> <p>16 Q Do you know what runaway trim is?</p> <p>17 A That the trim's -- what I think it means is that 18 the trim stayed stuck in one position or the other, in one 19 direction or the other.</p> <p>20 Q And that's for the electrical component -- 21 component of the system, right --</p> <p>22 A Right.</p>
<p>1 Q And what were those conversations?</p> <p>2 A I don't remember -- remember anything real 3 specific about -- specific conver -- conversations.</p> <p>4 Q Then just start with generally. Did you talk to 5 each one of them, or do you remember just talking to one of 6 them?</p> <p>7 A I think it was more as a group. We -- we only 8 had the opportunity to really discuss it -- I guess it was 9 the next night, the night of the -- the NTSB was last time 10 that we were really all together. And that's about the -- 11 the only time that we really had discussed it --</p> <p>12 Q And you have --</p> <p>13 (Proceedings participants speaking at the same time.)</p> <p>14 Q -- not since?</p> <p>15 A Not really, no.</p> <p>16 Q Tell us as much as you can remember about that 17 discussion.</p> <p>18 A We -- the major emphasis was we knew that we had 19 done everything right and the -- that the travels were 20 perfect and in the proper direction. And we couldn't 21 understand how could it be any different. That was 22 basically the gist of it.</p>	<p>1 Q -- not the manual portion?</p> <p>2 A Right.</p> <p>3 Q What do you know what about the pilot's procedure 4 was for using manual or electric trim on take-off?</p> <p>5 A I don't know. I don't know. I haven't read 6 the operation --.</p> <p>7 Q So from your work you were confident, number one, 8 that the -- the drum was wrapped properly with the correct 9 threaded cable coming off the front versus the back?</p> <p>10 A Yes.</p> <p>11 Q And you were confident that there was no crossing 12 of the cables between the drum and the turnbuckles?</p> <p>13 A Yes.</p> <p>14 Q And you were confident from having done your 15 operational check that the system was moving correctly to 16 its proper limits and in the proper direction?</p> <p>17 A Yes.</p> <p>18 Q Once you assured yourself of that, is that when 19 you would have signed off on 4 for the actuator replacement 20 and 7 for the cable replacement?</p> <p>21 A Yes.</p> <p>22 Q Where is there a sign-off on the replacement of</p>

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 6

COPY

Page 1

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

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COLGAN AIR, INC., :

:

Plaintiff, :

:

vs. : Civil Action

: No. 1:05 cv 213

RAYTHEON AIRCRAFT COMPANY, :

:

Defendant. :

:

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McLean, Virginia

Thursday, June 23, 2005

Videotaped deposition of DANIEL ROBERT KINAN, witness,
called for examination by counsel for the defendant,
pursuant to notice, at the offices of Mark A. Dombroff,
Esq., Dombroff & Gilmore, P.C., 1676 International Drive,
Penthouse, McLean, Virginia, before Malynda D. Whiteley, a
Registered Professional Reporter and a notary public in and
for the State of Virginia, beginning at 1:07 p.m., when
were present on behalf of the respective parties:

Page 6	Page 8
<p>1 Q We've asked you to come here today to ask you 2 some --</p> <p>3 MR. DOMBROFF: I think you have that backwards. 4 Colgan has brought the suit against Raytheon.</p> <p>5 MR. JONES: I just said -- I thought I said it 6 just was pending between them. Sorry --</p> <p>7 MR. DOMBROFF: That's okay.</p> <p>8 MR. JONES: -- if I misspoke.</p> <p>9 MR. DOMBROFF: That's okay.</p> <p>10 THE WITNESS: Okay.</p> <p>11 BY MR. JONES:</p> <p>12 Q It's litigation that Colgan has brought against 13 Raytheon. All right?</p> <p>14 A Okay.</p> <p>15 Q We've asked to you come here today to answer some 16 questions about your role in some maintenance done on the 17 aircraft that crashed and that is the subject of this 18 lawsuit.</p> <p>19 Do you understand that?</p> <p>20 A Yes.</p> <p>21 Q Tell us your full name, please.</p> <p>22 A Daniel Robert Kinan.</p>	<p>1 Q If you need a break, let me know; and we'll do 2 that. No problem at all.</p> <p>3 Tell us about your background in the mechanic 4 business starting from the first you've done through your 5 time in the aviation business and what you're doing now.</p> <p>6 Sort of walk through that, if you would.</p> <p>7 A Well, I guess I've been doing mechanical things 8 since I was probably 13, 14 years old.</p> <p>9 As far as my first job goes, I worked as an auto 10 mechanic for Sullivan Tire Company from '96 to '98. And I 11 went from that field over actually to a materials testing 12 company, engineering company and worked in that type of 13 construction materials testing just to try something 14 different for a while.</p> <p>15 Q When was that?</p> <p>16 A That was from about '98 to 2000.</p> <p>17 And then from that point, I decided to go back to 18 school and attended East Coast Aero Tech. I believe it was 19 from the -- the beginning of 2000 to about July 2001, I 20 think it was.</p> <p>21 Q So what made you want to get into the aviation 22 business?</p>
Page 7	Page 9
<p>1 Q Where do you live?</p> <p>2 A Weymouth, Massachusetts.</p> <p>3 Q What's your street address?</p> <p>4 A Oh. It's [REDACTED]</p> <p>5 Q What's your Social Security number?</p> <p>6 A [REDACTED]</p> <p>7 Q And you work at Colgan; is that right?</p> <p>8 A I do not. I no -- I no longer work at Colgan. I 9 work --</p> <p>10 Q Where do you work now?</p> <p>11 A I work for Hunter Engineering.</p> <p>12 Q And what sort of outfit is that?</p> <p>13 A It's an automotive diagnostic equipment company.</p> <p>14 Q The format here is just a simple, you know, 15 question-and-answer format. I'll ask you a question; you 16 provide me an answer. We got into a little bit of trouble 17 on the last one, speaking over one another. So if you can, 18 please wait till I finish the question before you give an 19 answer; and, likewise, I'll try and wait till your answer 20 before I give the next question.</p> <p>21 Is that fair?</p> <p>22 A Yes, sir.</p>	<p>1 A I always loved working with my hands -- and I 2 still do; I still work with my hands -- and always had a 3 good -- great interest in aircraft. So I put the two 4 together; and then, you know, you can do the math.</p> <p>5 Q Is -- is this school something you did while you 6 were otherwise employed?</p> <p>7 A I was employed during school at a restaurant, 8 just making some money to pay the bills.</p> <p>9 Q So was the schooling pretty much your full-time 10 thing?</p> <p>11 A Yes, it was, Monday through Friday.</p> <p>12 Q How much were you spending working during the 13 week?</p> <p>14 A I was probably working, I think, three nights a 15 week at the time.</p> <p>16 Q And this was an eighteen-month course, roughly; 17 is that about right?</p> <p>18 A Around fifteen.</p> <p>19 Q Fifteen?</p> <p>20 A Correct.</p> <p>21 Q And where was it again? I'm sorry.</p> <p>22 A East Coast Aero Tech, new Bedford, Massachusetts.</p>

Page 10	Page 12
<p>1 Q And did you pick that place because it was close 2 by? 3 A Yes. 4 Q And just generally what types of things did you 5 learn at your -- your aviation mechanics school? 6 A Pretty much every -- every system in a -- in a 7 general sense as far as hydraulics; pneumatics; 8 electronics; air frame; you know, you name it. In a 9 generally sense as far as aircraft go, they cover a little 10 bit of everything. 11 Q But it's generally all aircraft, not just 12 specific to a given model; right? 13 A Correct. 14 Q And they teach you how to follow maintenance 15 manuals, for example, when you do repair work? 16 A Yeah, they -- they definitely do, yes. 17 Q You learn about flight controls on an airplane? 18 A Yes. 19 Q What they are and what they do? 20 A Sure do. 21 Q Were you taught that flight controls are a 22 critical aspect of an aircraft?</p>	<p>1 A Yes, I did. 2 Q To get your A and P? 3 A Yes, I did. 4 Q And you took that? 5 A I sure did. 6 Q Passed it the first time? 7 A Yes. 8 Q When did you receive your A and P? 9 A The exact date -- 10 Q Roughly. 11 A Is probably -- I want to say August of '01. 12 Q A month before 9/11? 13 A Correct. 14 Q Where did you go to work? 15 A Colgan Air was -- actually I had applied to a few 16 places. I was going to go to American Eagle; and they 17 called me after 9/11 and said, "Sorry. No way." 18 So I called up Velma Valentine, who was the 19 hiring manager at that time. And she said, "No, we're not 20 hiring; but yes, we have a spot in Hyannis, because we 21 can't get anyone to work down there." And I said, "Well, 22 I'd love to work there; and I do not mind working on the</p>
<p>1 A The most critical. 2 Q Is it part of that when you trained that every 3 time you do some work on a flight control of an aircraft, 4 that you do an operational check afterward? . . . 5 A That's -- yeah, absolutely. 6 Q It makes sense? 7 A Makes -- it just makes perfect sense. 8 Q And you're trying to determine that the flight 9 surfaces travel their complete distance of travel; right? 10 A Yeah. 11 Q And that they're traveling the right direction; 12 right? 13 A Correct. 14 Q Those are the two critical things you're trying 15 to figure out when you do operational checks after work on 16 a flight control system? 17 A Oh, you're -- you're basically trying to see that 18 everything works as it is -- as it was when it came in; or 19 if not, to its altered state. I mean, just -- it -- it 20 needs to be absolutely correct. 21 Q And when you completed that course, did you have 22 to take a test?</p>	<p>1 Cape. I'd like to work on the Cape." And so it worked out 2 great. So -- 3 Q And you were from where originally? 4 A I was from Pembroke, Massachusetts. That's about 5 half an hour south of Boston. 6 Q What did you do when you started at Colgan? 7 A I worked as a mechanics' helper, the first thing. 8 They call you to work as a mechanics' helper for a certain 9 period of time -- I don't recall what it is -- before you 10 can actually sign anything off. 11 Q But you were already an A and P when you became a 12 mechanics' helper? 13 A Yes. 14 MR. JONES: Let's mark that. 15 (The training report was marked Defendant's 16 Exhibit No. 8 for identification.) 17 BY MR. JONES: 18 Q Mr. Kinan, we're handing you what we've marked as 19 Exhibit 8. This is a document that was produced by 20 Colgan's counsel in response to a request that we had made 21 to receive information about the mechanics that were 22 involved, and this appears to be a table of training that</p>

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<p>1 you received.</p> <p>2 Have you ever seen this document before?</p> <p>3 A No, I haven't.</p> <p>4 Q Well, working through it, just help me understand</p> <p>5 what sort of training you received once you joined Colgan.</p> <p>6 If you can use it as a frame of reference, great. If you</p> <p>7 just can give it to me from memory, that's fine too.</p> <p>8 Like, for example, you were hired in when</p> <p>9 exactly?</p> <p>10 A September of '01.</p> <p>11 Q The first entry on this chart showing training</p> <p>12 you'd received was in January of '02.</p> <p>13 A Right.</p> <p>14 Q Do you believe you received some training from</p> <p>15 Colgan before that date or not?</p> <p>16 A Absolutely.</p> <p>17 Q What's the first training you remember having</p> <p>18 received?</p> <p>19 A Oh. Are you talking -- you're not talking OJT;</p> <p>20 you're talking on paper-wise, certificate, initial,</p> <p>21 Phase I?</p> <p>22 Q Right.</p>	<p>1 Q So what's the Phase I we see here in</p> <p>2 January of '02?</p> <p>3 A That was -- that was -- they -- that was the</p> <p>4 initial -- you know, Phase I is -- is -- Beech Phase I is</p> <p>5 what it is, is you're going in and you learn about the</p> <p>6 Beechcraft and systems and where things are.</p> <p>7 But when I had -- when I went there, I actually</p> <p>8 had a good step up and a step ahead because I had already</p> <p>9 been -- usually when you get hired, only you will go right</p> <p>10 to that training immediately before you would go out and do</p> <p>11 anything else. So that's -- that's what that is.</p> <p>12 That's -- that's just, you know, Beech Phase I. And --</p> <p>13 Q So --</p> <p>14 A -- you're required to go through it, so they just</p> <p>15 didn't have a class at the time when I first came on.</p> <p>16 Q So you had a step up because you'd had some</p> <p>17 on-the-job training and, therefore, some familiarity with</p> <p>18 the 1990s?</p> <p>19 A Yes.</p> <p>20 Q We're just working up the list quickly. And I</p> <p>21 don't want to spend a great deal of time on this; but just</p> <p>22 walk through what the rest of these items are, if you</p>
Page 15	Page 17
<p>1 A No. Before this initial Phase I, which you see</p> <p>2 here, it was just on-the-job training.</p> <p>3 Q Okay. Describe, then, for me the initial</p> <p>4 on-the-job training you received.</p> <p>5 A Well, just, you know, they -- while I'm working,</p> <p>6 you know, running me through what a preflight is and what a</p> <p>7 routine is. But before that -- and just basically</p> <p>8 familiar -- familiarizing me what the airplane -- you</p> <p>9 know, what systems and what's what. I mean you just have</p> <p>10 to learn what's where and, you -- you know.</p> <p>11 Q At the time you joined Colgan, were they</p> <p>12 operating the 1900 and Saab?</p> <p>13 A At the time I joined they -- I think they had</p> <p>14 probably two Saabs at the time.</p> <p>15 Q The rest were 1900s?</p> <p>16 A 1900s were primary, yeah.</p> <p>17 Q So you were getting familiar with the 1900s from</p> <p>18 the get-go?</p> <p>19 A Yes.</p> <p>20 Q And the initial part of that was on-the-job</p> <p>21 training?</p> <p>22 A Yes.</p>	<p>1 could.</p> <p>2 A Well, at the same time when you're in -- after</p> <p>3 you take Phase I, you get your airworthiness release. I</p> <p>4 believe there's one on the Beech and on the Saab because</p> <p>5 you're touching the Saab too.</p> <p>6 Q That's why there's two?</p> <p>7 A Yes. I believe that's what this is.</p> <p>8 And the ground handling is you would get --</p> <p>9 you're taught how to -- how to, you know, taxi, tow the</p> <p>10 air -- not taxi, but tow the aircraft properly, hand</p> <p>11 signals, things like that.</p> <p>12 Q Is that a class taught at Colgan?</p> <p>13 A This is a -- I believe this is a -- yeah, is a</p> <p>14 class. I can't recall if that was a class or not. I see</p> <p>15 there's two here. This is probably Beech and Saab.</p> <p>16 Q Okay. Moving on up to initial taxi and run-up in</p> <p>17 April of '02.</p> <p>18 A April '02, this was -- you have someone at the</p> <p>19 base, which is actually with Scott at the time,</p> <p>20 run-qualified and actually a -- a teacher who signed off to</p> <p>21 teach someone to run -- to run and taxi this -- the</p> <p>22 Beechcraft. And that's what that -- that's what this is</p>

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<p>1 here. I was taught at -- I learned with him by riding with 2 him in the -- how to run the -- run the Beech.</p> <p>3 Q And then he signs off on you having done that, 4 and that's why it goes in your record like this?</p> <p>5 A Correct.</p> <p>6 Q And the Phase II, is that a follow-up training on 7 the Beech?</p> <p>8 A That's a Beech, and that's -- actually Phase II 9 is after you -- after you've worked on the Beech for a 10 while, they'll bring you back in and -- and actually put 11 you in a deeper system so you can really learn how 12 everything ticks. That's what Phase II is.</p> <p>13 Q And that was in January of '03 --</p> <p>14 A Correct.</p> <p>15 Q -- a year after you took the Phase I?</p> <p>16 A Right.</p> <p>17 Q Okay. Now, what were the requalification 18 releases?</p> <p>19 A I believe every -- I probably -- I'm -- I'm not 20 sure. I think it's every year you need to just -- it's a, 21 you know -- a -- a -- mer- -- or every year they have a -- 22 a retraining of the -- they go over the maintenance manual,</p>	<p>1 get them all done, or are they just things that you learn 2 because you had to do this task?</p> <p>3 A You -- well, you would work with someone on the 4 task. And when you work with someone on the task, not 5 necessarily that time, but maybe the time after or -- or it 6 could be a few times, depending on how quickly you learn -- 7 if that -- the person that's your trainer, who would 8 usually be, like, your lead mechanic at the time, I think 9 pretty much, you know, would be -- Scott had taught me 10 everything -- would sign me off on the book as he feels 11 comfortable that you could do it on your own.</p> <p>12 Q So generally in your training at the A and P 13 school and in these different classes that you took while 14 at Colgan, were you taught when you follow a maintenance 15 manual or a work card, that you do every step that's on the 16 list?</p> <p>17 A Yes.</p> <p>18 Q Are you ever allowed to deviate from the list?</p> <p>19 A Well, it's -- I mean it's -- well, there's -- you 20 know, there is -- as far as the maintenance manual goes, 21 there's some discretion you needed because if you didn't 22 have discretion in the Beech manual, then you would</p>
Page 19	Page 21
<p>1 or GMM. So that's what that is. You needed to know all 2 the proper procedures pretty much. I think once a year you 3 needed to be resigned off on them to get airworthiness 4 release in aircraft.</p> <p>5 Q So does this lay out pretty much all the 6 formalized training you received while at Colgan?</p> <p>7 A I -- I believe it does, yes.</p> <p>8 I mean everything but OJT, which we had -- also 9 had OJT books in the hangar that we were filling out on a 10 regular basis.</p> <p>11 Q You fill out, actually complete them --</p> <p>12 A Correct.</p> <p>13 Q -- as you work through them?</p> <p>14 A As you learn -- as you learn them, you -- you 15 will learn them and your trainer would sign them.</p> <p>16 Q How do you work through those? Just at your own 17 pace in the areas you want to, or are you led through them?</p> <p>18 A What do you mean? Get a -- what do you mean by 19 the question?</p> <p>20 Q Well, I'm trying to understand whether the -- the 21 books that you used for on-the-job training -- are they 22 things you systematically worked through to make sure you</p>	<p>1 probably never get most of the things done in there.</p> <p>2 Q Now, why do you say that as -- as to the Beech 3 manual in particular?</p> <p>4 A It's very vague.</p> <p>5 Q And which manual are you talking about 6 particularly?</p> <p>7 A The 1900 manual.</p> <p>8 Q The 1900D maintenance manual?</p> <p>9 A Both of them, C and D.</p> <p>10 Q C and D.</p> <p>11 So there are things that you need to do in 12 addition to what's in the listing in the maintenance manual 13 typically? Is that what you're saying?</p> <p>14 A Yes.</p> <p>15 Q But if it's there, you need to do it; right?</p> <p>16 A Yes.</p> <p>17 Q So it -- I guess what I'm hearing you say is that 18 there are things that an A and P has to employ -- or there 19 is discretion you have to employ to get things done that 20 aren't necessarily covered by the maintenance manual? --</p> <p>21 A That's --</p> <p>22 Q -- is that fair?</p>

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<p>1 A This form is to -- is -- is -- is for us, the 2 maintenance department, to check the aircraft and the 3 packet. This is a checklist Colgan has come up with to 4 check the aircraft and the packet to make sure we can sign 5 the log book.</p> <p>6 Q And who signs the log book itself?</p> <p>7 A Who -- who signs the log book?</p> <p>8 Q Yes.</p> <p>9 A It would be -- on this case it's the person that 10 does the release checklist.</p> <p>11 Q So that would have been you for this particular 12 task that's reflected in 13?</p> <p>13 A Right.</p> <p>14 Q And your -- your name would be in the log book 15 itself?</p> <p>16 A Right.</p> <p>17 Q Now, is this item, No. 13, only for the free play 18 check itself and not any of the work that flowed from it?</p> <p>19 A No. Why would -- what -- the question -- the 20 question -- I don't understand the question.</p> <p>21 Q Okay. Let me try --</p> <p>22 A I don't --</p>	<p>1 of the various tasks in which you were involved on 240 in 2 August of 2003.</p> <p>3 You performed the free play check; correct?</p> <p>4 A I performed the inspection of the free play 5 check.</p> <p>6 Q Okay. Perry actually did the -- the free play 7 check; right?</p> <p>8 A Correct.</p> <p>9 Q Once that was done, the actuators needed to be 10 replaced; right?</p> <p>11 A Correct.</p> <p>12 Q Were you involved in the replacement of the 13 actuators?</p> <p>14 A No. Well, at the -- at the point where -- I'm 15 sorry. I was. But it was the -- it was the replacement of 16 the second actuator on the right side. It was removal of 17 the initial actuator that caused the problem in the front 18 of the airplane.</p> <p>19 Q The problem in the front of the airplane being 20 the cable --</p> <p>21 A Yes.</p> <p>22 Q -- needing replacement?</p>
Page 43	Page 45
<p>1 Q -- and --</p> <p>2 A -- know what you're saying by that.</p> <p>3 Q Let me try and explain better. The first task 4 that you were given to do on this aircraft was the Detail 5 Six inspection; right?</p> <p>6 A Yes.</p> <p>7 Q The documentation we've just been walking through 8 here with these various checklists, including Exhibit 13, 9 do these documents deal only with the Detail Six inspection 10 or the things that flowed from it such as the replacement 11 of the actuators, the ultimate replacement of the cable; or 12 were those separate packages of documentation?</p> <p>13 A This -- this checklist is just to check that the 14 package is complete and that the -- the -- you know, the 15 panels are on the plane and the circuit breakers are on. 16 There's no -- it's -- I -- I mean I -- I don't understand 17 where else you're going with this. This -- that's all this 18 is -- that's all this is for.</p> <p>19 Q So this doesn't necessarily speak to the scope of 20 the job? It just --</p> <p>21 A It does not.</p> <p>22 Q Okay. So let's set the picture again of the --</p>	<p>1 A Yes.</p> <p>2 Q And then you were involved in the replacement of 3 the forward cable too; correct?</p> <p>4 A Yes, I was.</p> <p>5 Q And then you were involved in the operational 6 checks that followed both the forward cable replacement and 7 the actuator replacement; correct?</p> <p>8 A Correct.</p> <p>9 Q Anything else you were involved in?</p> <p>10 A That's -- that was it. No.</p> <p>11 Q All right. Let's walk through those one at a 12 time.</p> <p>13 What was your role in the actuator replacement?</p> <p>14 A My role in the actuator replacement was the first 15 night I assigned the -- I assigned two guys to each 16 actuator, where there would be a tech on the job and then a 17 helper. And that was my only role the first night, was to 18 just make sure the work was going smoothly.</p> <p>19 Q Do you remember whether the first night that 20 you're talking about here would have been the same shift 21 when the free play check was done and it was discovered 22 that the actuators needed to be changed?</p>

Page 46	Page 48
<p>1 A I don't recall if I did that day. I believe it 2 was the same -- I believe it was the same night, yes.</p> <p>3 Q So who did you choose to do that?</p> <p>4 A Put the actuators in?</p> <p>5 Q Yeah.</p> <p>6 A I had -- I know I had Dominick and -- and Scott 7 on one side, I believe it was, and Larry and -- geez, I 8 think it was -- I -- I don't recall who I -- I don't recall 9 the other people. I really don't.</p> <p>10 Q Is it Larry Ratcliff?</p> <p>11 A Ratcliff.</p> <p>12 Q Ratcliff?</p> <p>13 A Right.</p> <p>14 Q And was on -- and so you had two on each side?</p> <p>15 A Yeah.</p> <p>16 Q There's one actuator on each side, so you have --</p> <p>17 A Two people --</p> <p>18 Q -- two men working --</p> <p>19 A -- yes.</p> <p>20 Q -- on each one?</p> <p>21 And you say on one side it was Perry and Scott.</p> <p>22 Which Scott?</p>	<p>1 A No.</p> <p>2 Q So as it relates to the initial work on the 3 actuators, you assigned people to do it; but did you 4 participate at all in the work itself?</p> <p>5 A On the initial night, no.</p> <p>6 Q And do know what was done the initial night, what 7 got accomplished?</p> <p>8 A The actuators were changed --</p> <p>9 Q So --</p> <p>10 A -- and the --</p> <p>11 Q -- the job was done?</p> <p>12 A And the -- I -- well, I'm sorry. I said -- I was 13 assisting in the -- the rigging checks at the end, at the 14 end of the actuator installation. I -- I jumped in at that 15 point to assist and make sure the rigging checks were done 16 correctly.</p> <p>17 Q And were all four of the guys you assigned to it 18 plus yourself participating in the rigging checks?</p> <p>19 A I believe there was once -- there was at -- at 20 least -- at least three of us, yes, three. I think all 21 four were there, yeah.</p> <p>22 (The REPS No. 27-30-05 was marked Defendant's</p>
Page 47	Page 49
<p>1 A Scott Geb- -- he was a -- a new -- one of the new 2 guys, Scott Gebrauer or Scott Gebauer, something like that.</p> <p>3 Q Is that the Scott with a G?</p> <p>4 A With a G; right.</p> <p>5 He was just primarily a helper; hold tools, hold 6 a -- you know, hold whatever and get the book for me.</p> <p>7 Q He was a pretty new guy?</p> <p>8 A Yeah. I believe it was -- was probably his 9 second night. He was just there to help -- assist Dominick 10 with an extra hand.</p> <p>11 Q Perry had a fair amount of experience in what he 12 was doing, didn't he?</p> <p>13 A Yeah.</p> <p>14 Q Now, were you senior to these guys in terms of 15 hierarchy within the company?</p> <p>16 A To the guys working on the actuators?</p> <p>17 Q (Counsel moves head up and down.)</p> <p>18 A Yes, I was.</p> <p>19 Q You were the guy who was assigning the work?</p> <p>20 A Yes. Well, I was the lead mechanic on -- yes.</p> <p>21 Q You were a lead.</p> <p>22 Were any of them also leads?</p>	<p>1 Exhibit No. 14 for identification.)</p> <p>2 BY MR. JONES:</p> <p>3 Q We've handed you now what's marked as Exhibit 14.</p> <p>4 MR. JONES: Counsel, I do have an extra copy of 5 that.</p> <p>6 (Document presented.)</p> <p>7 MR. DOMBROFF: Thank you.</p> <p>8 BY MR. JONES:</p> <p>9 Q This a printout from the REPS 1900D maintenance 10 manual of the steps for doing elevator tab control rigging; 11 is that right?</p> <p>12 A Yes.</p> <p>13 Q Now, when you would have gone to do the rigging 14 check following the actuator work, is this the document you 15 would go get to know the steps to do the rigging?</p> <p>16 A This is it, yes.</p> <p>17 Q Now, is this a -- a procedure that would also 18 have a work card like we've already looked at?</p> <p>19 A I don't -- I don't think this has a work card, 20 no.</p> <p>21 Q So when you don't have a work card to refer to, 22 you go to the REPS system and print out the pages from the</p>

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<p>1 A In the morning, if that -- I mean this was after 2 the cable, yeah. I guess it -- at least there was a "No" 3 answer.</p> <p>4 Q We had previously marked Exhibit 7 as the work 5 order card for replacement of the cable -- the forward 6 cable. And I had asked Mr. Servis about turnover notes 7 since the drum, at least, had already been removed before 8 he started in on this. And he said he couldn't remember 9 any turnover notes and said they would have been on the 10 back. Well, we didn't have the back, so we asked your 11 counsel to find it.</p> <p>12 And 16 now is the same document with the back.</p> <p>13 A Uh-huh.</p> <p>14 Q Is it right that there were no turnover notes?</p> <p>15 A No turnover notes because there was no turnover.</p> <p>16 Q What do you mean? Why do you say there was no 17 turnover?</p> <p>18 A Because I can't turn something over to myself. I 19 mean I guess I could. But at this point, you know, why 20 would I?</p> <p>21 Q Did you actually remove the drum?</p> <p>22 A I removed the cable in the drum.</p>	<p>1 Q But --</p> <p>2 A But he wasn't performing work.</p> <p>3 Q But for some of -- reason wasn't available for 4 this task?</p> <p>5 A Right.</p> <p>6 Q Would it have been preferable to have Perry on 7 this task because he had been involved in the drum coming 8 out in the first place?</p> <p>9 A No. Because like I said before, there was no -- 10 there was -- it was no help from what we were looking at. 11 It's -- this sits in a certain way with the gear and the -- 12 and the shaft. And from the way the cable was, it wouldn't 13 have helped us one way or another. If the cable was out or 14 the cable was in on the drum, it didn't make a difference.</p> <p>15 Q It wouldn't help you know which cable end was 16 coming off the front or the back of the drum?</p> <p>17 A No; it wasn't on the drum. It had unspun. It 18 was --</p> <p>19 Q Was it -- was it coming out of these respective 20 gaps in the guard, or was it all the way off the end?</p> <p>21 A I don't recall.</p> <p>22 Q So the next day when the cable was there and the</p>
Page 79	Page 81
<p>1 Q No. I -- I mean --</p> <p>2 A So I mean -- I did not -- yeah -- no, I did not 3 remove the drum.</p> <p>4 Q The first day?</p> <p>5 A Right.</p> <p>6 Q That was Perry?</p> <p>7 A Yeah.</p> <p>8 Q So Perry started that work; right?</p> <p>9 A I guess so, yeah.</p> <p>10 Q And Perry turned that over essentially to the 11 next shift to finish the job of replacing the cable; right?</p> <p>12 A Well, I -- I guess you could -- I don't know. I 13 don't -- I guess you could say that. I don't --</p> <p>14 Q Perry was not involved on the 25th in the 15 replacement of the cable; correct?</p> <p>16 A Right.</p> <p>17 Q Was he working back on the actuator?</p> <p>18 A No.</p> <p>19 Q Where was he?</p> <p>20 A I don't think -- I think he was just -- he was 21 either not there or he was supervising that night. He 22 was -- I think he was there.</p>	<p>1 actuator was there, who assigned the various work that 2 needed to be done to replace the cable and the actuator?</p> <p>3 A I assigned the actuator to Dominick, and I took 4 on the cable with Scott myself.</p> <p>5 Q What about work to provide access to do the cable 6 replacement? Who'd you give that to? Or -- or was it you 7 assigning that, I guess, is the first question?</p> <p>8 A If I had access?</p> <p>9 Q Let me help you with a document or two.</p> <p>10 (The Work Order Nos. 09631, 09632, and 09633 were 11 marked Defendant's Exhibit Nos. 17, 18, 19, 12 respectively, for identification.)</p> <p>13 BY MR. JONES:</p> <p>14 Q We've handed you 17, 18, and 19. These are 15 maintenance work orders for work done on 240 on 16 August 25 or 26, 2003.</p> <p>17 17 has to do with removing the captain's seat and 18 a partition. -</p> <p>19 A Uh-huh.</p> <p>20 Q -- 18, floorboards and pedestal sides; and 19, a 21 fuselage access panel.</p> <p>22 Are those all tasks that were needed to be done</p>

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<p>1 to facilitate the cable replacement?</p> <p>2 A Right.</p> <p>3 Q And were those something that you would have</p> <p>4 needed to assign to someone?</p> <p>5 A No. I could do them myself, or I could assign</p> <p>6 them.</p> <p>7 Q Did you do these?</p> <p>8 A Yes, I did.</p> <p>9 Q And then on the -- on the bottom side of each one</p> <p>10 of these, we have the replacement of each of those items;</p> <p>11 is that right?</p> <p>12 A Uh-huh.</p> <p>13 Q And were each of those done by Dominick?</p> <p>14 A No, that's my name of there.</p> <p>15 Q Oh, I'm sorry.</p> <p>16 So you did both; you took them out and put them</p> <p>17 in?</p> <p>18 A Yes.</p> <p>19 Q Did you remove them the day the drum was taken</p> <p>20 out or the day the cable was replaced?</p> <p>21 A I removed them the day -- the shift the cable was</p> <p>22 replaced.</p>	<p>1 might have taken this stuff out end of shift and said: Let</p> <p>2 me get ahead of the game so when I come in tonight, these</p> <p>3 panels are out and I can do the cable change.</p> <p>4 So -- and then I -- and when I take them out, I</p> <p>5 generate a job card so then -- that -- so that they know</p> <p>6 something's open, there's job cards open. I believe I</p> <p>7 opened these up that morning. --</p> <p>8 Q And if it helps --</p> <p>9 A -- the following --</p> <p>10 Q — Mr. Servis testified that the access points</p> <p>11 were open when he started at the next shift to replace the</p> <p>12 cable.</p> <p>13 A Okay. So I took them out -- I took them out end</p> <p>14 of shift.</p> <p>15 Q These sequence boxes on these work order</p> <p>16 documents, what are they designating? We got a 5; 4,</p> <p>17 taking out the captain's seat. 6 was --</p> <p>18 A Just the -- just the number of the job cards,</p> <p>19 just -- it -- it's -- they keep track of job cards. So --</p> <p>20 you need a sequence number on all that so if you have six</p> <p>21 job cards, you know you have six to -- six -- there's a --</p> <p>22 a tally sheet that we fill out too; job card made out, job</p>
Page 83	Page 85
<p>1 Q And that, of course, would have had to be done</p> <p>2 before you can replace the cable, getting the access;</p> <p>3 right?</p> <p>4 A Now, you know, I can't remember if I generated</p> <p>5 these job cards that morning and took them out or I took</p> <p>6 them out that night. I mean that's -- it's basically</p> <p>7 irrelevant. I don't know. Because if I took them out that</p> <p>8 night, then it's an open job card signed off on the 26th</p> <p>9 to -- say I took them out on the 25th, I generated these</p> <p>10 job cards, take them out.</p> <p>11 All right. So that's -- I don't -- I think I --</p> <p>12 I might have taken them out that morning; I might have</p> <p>13 taken them out that night. I don't know when I took them</p> <p>14 out, you know.</p> <p>15 Q I get messed up on nights and mornings because</p> <p>16 you're working --</p> <p>17 A When I say "nights" -- when I say "morning" --</p> <p>18 all right. So let me use "end of shift" --</p> <p>19 Q Yeah.</p> <p>20 A -- or "beginning of shift". Okay?</p> <p>21 Q I think that's fair.</p> <p>22 A So I might have taken these -- I think I possibly</p>	<p>1 card completed, checked off. So that's just to keep a</p> <p>2 tally of the job cards.</p> <p>3 Q Does it denote anything about the progression of</p> <p>4 the work?</p> <p>5 A It doesn't. It -- it's -- it sometimes will fall</p> <p>6 in that order just because that's way the write-ups are</p> <p>7 being formed. But it's just -- it doesn't -- doesn't have</p> <p>8 any significant relevance to order of performance.</p> <p>9 Q Let me show you Exhibit 4, which we marked</p> <p>10 earlier with Mr. Servis, and just confirm that this was the</p> <p>11 job card that related to the replacement of the actuator</p> <p>12 from the failure of the free play check.</p> <p>13 A Uh-huh.</p> <p>14 Q Is that what it is?</p> <p>15 A (No response.)</p> <p>16 Q Did you understand my question? I'm just asking</p> <p>17 if that's --</p> <p>18 A I --</p> <p>19 Q -- what it is.</p> <p>20 A Yes, it is. Yes. That's what it is.</p> <p>21 Q Sorry if I missed your answer.</p> <p>22 A Yeah, it's --.</p>

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<p>1 Q The top part of it, is that something you filled 2 out?</p> <p>3 A Yes.</p> <p>4 Q The bottom part, is that yours too?</p> <p>5 A No, that's Dominick.</p> <p>6 Q Now, when he says, "Installed right-hand elevator 7 trim tab actuator in accordance with the Beech manual 8 number" --</p> <p>9 A Uh-huh.</p> <p>10 Q -- "pages and rig in accordance with the other 11 chapter," it says, "All checks good".</p> <p>12 Q Is this the same check when we had it bind up?</p> <p>13 A No, this is after the fact.</p> <p>14 Q This is after the second replacement of the 15 right-hand actuator?</p> <p>16 A Right.</p> <p>17 Q And you and Dominick were both involved in that; 18 right?</p> <p>19 A Right.</p> <p>20 Q Okay. Going back to the replacement of the 21 cable, tell me about your role in that.</p> <p>22 A Well, I worked with Scott. And we first -- I</p>	<p>1 A Yes, but the -- the lead lines were just to help 2 you get it through all the small holes, which we fig -- 3 you know, we were able to do anyways. It was basically 4 just to help you.</p> <p>5 You know, the lead lines wouldn't even get it to 6 the pulleys because you need to remove the pins in the 7 pulleys anyways to hold the cable in. So the lead lines at 8 that point wouldn't have been helpful so --.</p> <p>9 Q But they would have been helpful in -- in 10 threading the -- the cable back through the system; right?</p> <p>11 A Uh-uh, no, because the turnbuckles wouldn't -- 12 with the -- with the leads lines on and the turnbuckles, 13 it -- they wouldn't have made it through there. With the 14 lead lines attached to the turnbuckles, they would have 15 never made it through the pulleys.</p> <p>16 Q What is it about the attachment of a lead line 17 through a turnbuckle that would keep it from going through 18 the pulleys?</p> <p>19 A It's not that the -- it's not that the lead line 20 would keep it from going through the pulleys, but the lead 21 lines just wouldn't have been helpful. A lead line usually 22 in the field is -- is safety wire. Safety wire gets caught</p>
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<p>1 think before we took out the old one, we marked at the 2 pulleys that one -- one was the left-hand threaded cable 3 and we marked at the pulleys -- at each pulley -- at each 4 bracket, at each pulley the top cable, the one that was -- 5 with a T, I think, so that we could keep track of which 6 side or -- and which route the left-hand cable ran on.</p> <p>7 Q So did the T match with the left-hand side 8 turnbuckle?</p> <p>9 A I can't recall which turnbuckle it was. It was 10 one of the two that we marked so that we knew it -- that it 11 would go in.</p> <p>12 Q So your purpose in doing the Ts along the -- the 13 pulleys was to know which cable was the right-hand or the 14 left-hand threaded turnbuckle; right?</p> <p>15 A That's correct.</p> <p>16 Q Whose idea was to it keep track of it that way?</p> <p>17 A Scott's.</p> <p>18 Q Did you object to that at all?</p> <p>19 A No, I thought it was a great idea.</p> <p>20 Q You knew that doing it that way instead of using 21 the lead lines, as called for in the maintenance manual, 22 was a departure from the maintenance manual, didn't you?</p>	<p>1 up, snagged on everything. So it just wasn't a good -- it 2 wasn't -- it just wasn't going to be helpful at all.</p> <p>3 Q When you depart from the -- the methods called 4 for in a maintenance manual checklist, are you required by 5 your training at Colgan or through your A and P training to 6 get any sort of approval from someone above?</p> <p>7 A I don't know. I mean it's -- you know, we're 8 not -- we're not departing through -- we're not departing 9 from a step, you know. We're not departing from a step 10 that we -- of running the cable. We still ran the cable.</p> <p>11 We just didn't use the lead lines to 12 facilitate -- which that word is used in the manual, 13 "facilitate" -- which is helping you get them through the 14 small little holes. And that's all those ca -- that lead 15 lines were used for. We didn't need them to help us get 16 them through the small holes at that point.</p> <p>17 Q So you and Scott employed discretion to determine 18 that it was a better method to mark the pulleys with Ts 19 than to use lead lines --</p> <p>20 A Yes.</p> <p>21 Q -- is that correct?</p> <p>22 A Yes, we did.</p>

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<p>1 Q Did you discuss that with anyone before deciding 2 to do that?</p> <p>3 A No, we just discussed it with each other.</p> <p>4 Q What exactly did you discuss about it before 5 making the decision?</p> <p>6 A Well, that the -- we just didn't -- we just 7 didn't need the lead lines to get it through the run we had 8 to go through. You know, there was two of us there. It 9 was -- it wasn't going to be a problem.</p> <p>10 But the lead line -- a lead line would probably 11 even make it more confusing. You got a 50-50 shot of 12 getting it on the right pulley if you use a lead line. If 13 you use your hands, go one pulley at a time, you know 14 you're -- you're putting it on the right pulley.</p> <p>15 Do you agree with that?</p> <p>16 Q Were you involved in feeding the new cable back 17 through?</p> <p>18 A Yes.</p> <p>19 Q And that was done by just pulling them together, 20 two -- two ends of it doubly all the way through without 21 any effort to put it on the pulleys initially, wasn't it?</p> <p>22 A No. I think what we did is we had the -- we had</p>	<p>1 is." Because you can't always see through bulkhead where 2 that one goes, he would tug it and I'd be on the other end 3 and give it a tug. "Yeah, that's it. Okay. I agree this 4 is the one that's on that side." Go to the next spot. 5 Give a little tug. "Okay. I agree it's" -- and we'd mark 6 them as we go.</p> <p>7 So I -- I don't remember if I wrote the mark or 8 he wrote the mark. That's -- that's what I don't remember.</p> <p>9 Q So do you remember starting with one and saying, 10 "All right. This is the left-hand or it's the right-hand," 11 and you figured out which one it was and said, "We're going 12 to mark this one with a T"?</p> <p>13 A Right.</p> <p>14 Q So you were focused on whether it's a left- or 15 right-hand threaded turnbuckle because you want to match it 16 to the one on the back; right?</p> <p>17 A Well, we're focused on it coming out of the -- 18 coming out in this -- we're focused on -- in this drawing 19 coming out in the correct orientation, which would be, I 20 believe -- see, I -- see, I think he come up with top from 21 this, top. Top, stayed at the top, still at the top, top, 22 top. We made sure it's the top one -- is this cable,</p>
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<p>1 the center point marked that was wrapped on drum, and we 2 threaded one cable through at a time.</p> <p>3 Q One cable through at a time?</p> <p>4 A I believe that's what we did, yeah.</p> <p>5 Q Who marked the pulleys with the Ts?</p> <p>6 A Scott.</p> <p>7 Q And were you involved at all in that process?</p> <p>8 A Well, yeah. We discussed -- he discussed with me 9 what -- what he -- what his intention was of doing that. 10 And I agreed it was a really good idea, yes.</p> <p>11 Q So you did you participate in any way in him 12 marking those?</p> <p>13 A No.</p> <p>14 Q He took care of that part of it?</p> <p>15 A Yeah. I was right there; but, yeah, he -- he did 16 the writing.</p> <p>17 Q Were you working the cables at all while he was 18 doing this?</p> <p>19 A Well, after the marks were made -- well, what we 20 did is he would tug a -- he would tug on a cable. I -- you 21 know, and I would right there. He would tug on the cable 22 and say, "Is this the one that you're feeling?" "Yes, it</p>	<p>1 whatever one that was coming out on the --</p> <p>2 Q "Top," meaning the one that comes out of the 3 front side of the drum as it's mounted in the -- in the 4 cockpit?</p> <p>5 A Right. I believe that's what we came up with 6 from the picture. We just called it the top.</p> <p>7 Q So you'd want to figure out which --</p> <p>8 A It's on top of this pulley here instead of -- 9 opposed to being underneath it. I think that's how we came 10 up with the T.</p> <p>11 Q Oh. So we can have a clean record, when you say 12 "this pulley," you're talking about the first pulley set 13 below the drum; right?</p> <p>14 A No. We might have -- I -- you know, like I said, 15 I can't remember how we came up with the T. But it was 16 a -- it was a way to remember that -- that one would 17 stay -- this one cable would be the same one all the way 18 through and so on and so forth.</p> <p>19 Q So you don't remember whether you or Perry made 20 those marks -- or not Perry. I'm sorry -- Scott?</p> <p>21 A Right. No, I don't.</p> <p>22 Q Once you got that marked, what did you do?</p>

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<p>1 A Once that was marked, we removed the old cable -- 2 well, before we moved the old cable, I made marks on the 3 FDR. There was a small little bracket on the FDR clamped 4 on the cable on a spool-type -- spring-loaded spool-type of 5 device, which I believe was a -- some type of a 6 tensiometer.</p> <p>7 And I marked on each side of the cable with some 8 nail polish just so that we could -- I'll get to that 9 later.</p> <p>10 And then at the front where that little Z was, I 11 put a little -- a little dab of nail polishing there so 12 that we could tell where the center of the cable was.</p> <p>13 Q You're talking about on the old or the new?</p> <p>14 A The old, on the old.</p> <p>15 Then -- we then brought the cable outside of the 16 airplane, stretched it out, and took the new cable and 17 stretched that next to it because the cable obviously are 18 all wound up from the drum and --</p> <p>19 Q You had to disconnect the turnbuckles, though, 20 didn't you?</p> <p>21 A Right.</p> <p>22 Q When did you do that?</p>	<p>1 And the item was going to be MEL'd anyways.</p> <p>2 Q MEL'd?</p> <p>3 A MEL'd.</p> <p>4 Q What's that?</p> <p>5 A It's a -- a -- a -- MEL stands for "minimum 6 equipment list," which means that it needs to go and get 7 calibrated. So you could MEL it until it goes and gets 8 calibrated, which is, like -- they give you, I think, ten 9 days on an MEL to go get that done.</p> <p>10 Q It's like an interim status for it?</p> <p>11 A What do you mean?</p> <p>12 Q A temporary status for it till it gets approved?</p> <p>13 A Well, it has to go get calibrated; and we don't 14 have the calibration equipment to calibrate an FDR.</p> <p>15 Q I see.</p> <p>16 A So the only thing that I was concerned with when 17 I put this block on there or -- or this mark on the block 18 is that nothing would -- it wouldn't hit anything. Yeah. 19 I didn't want it to go too far and hit the spool or too far 20 and pull the spool too far out. So as long as I know it 21 was, you know, within a -- a millimeter or -- or a couple 22 of -- very, very close to where the old one was, it</p>
<p>1 A That was at the point we removed the cable after 2 making all the markings.</p> <p>3 Q Before or after you put nail polish at the FDR?</p> <p>4 A That was after. After we made all the markings, 5 we undid the turnbuckles.</p> <p>6 Q And when you say "markings," you're talking about 7 not just the markings on the --</p> <p>8 A The nail polishing markings, the T markings --</p> <p>9 Q Okay.</p> <p>10 A -- right.</p> <p>11 Q When you got it out of the aircraft and you 12 spread it out next to the other one, what did you do?</p> <p>13 A We verified the length. It was -- it was pretty 14 much right there. And it was -- it was basically so we 15 could put the left-hand threads with the left-hand threads, 16 which are marked with a -- I think there's a -- they're 17 marked -- I forgot what the mark is on turnbuckle.</p> <p>18 There's a -- and then we match up the right with 19 right and then go down on the floor with them stretched out 20 and make a mark where the FDR -- an approximation where the 21 F -- right next to where that mark was, FDR would go right 22 about here.</p>	<p>1 wouldn't cause any interference.</p> <p>2 Q When you disconnected the turnbuckles from the 3 aft cable --</p> <p>4 A Uh-huh.</p> <p>5 Q -- were those turnbuckles square to one another 6 or were they offset?</p> <p>7 A The aft? Oh, in the plane?</p> <p>8 Q Yes.</p> <p>9 A They were -- I can't recall if they were square 10 or offset. I know they were coming out of -- they were 11 inside of conduits --</p> <p>12 Q Uh-huh.</p> <p>13 A -- so I had to slide the conduits back. And I 14 can't remember if they were squared or offset. I don't 15 think they're squared. I -- I'm guessing, you know. I 16 don't even want to say because it's a guess. I guess 17 they're offset. That's --.</p> <p>18 Q And what would make you think they're more likely 19 offset?</p> <p>20 A So they wouldn't rub each other. But they're in 21 the conduits anyways.</p> <p>22 Q Right.</p>

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<p>1 A That's what keeps them from rubbing together.</p> <p>2 Q At the time you disconnected the turnbuckles,</p> <p>3 were the aft cables still connected to actuators in place</p> <p>4 or were -- was one of the actuators out?</p> <p>5 A The right actuator was being replaced, so they</p> <p>6 were unhooked. It was unhooked in the rear on the right</p> <p>7 side.</p> <p>8 Q The left side was still replaced?</p> <p>9 A The left side was still installed.</p> <p>10 Q So was there tension on the aft portion of the</p> <p>11 cable running on the left side?</p> <p>12 A On the left side, there was -- well, there was no</p> <p>13 tension because it's all one intertwined system. No</p> <p>14 tension on the left side because of that right side was</p> <p>15 unhooked.</p> <p>16 Q Once you marked the old cable with the nail</p> <p>17 polish, pulled it out, and got it outside with the other</p> <p>18 one, what did you do?</p> <p>19 A We lined it up to next to the new one, marked the</p> <p>20 new one in the same spots with a little dab of nail polish,</p> <p>21 and then -- then cleaned the cable up with some type of</p> <p>22 solvent to remove any type of grease or anything that was</p>	<p>1 Q Did you ever --</p> <p>2 A We just used -- we used -- I mean the picture's</p> <p>3 cut and dry. They put that note of right-hand thread, they</p> <p>4 put that note of left-hand thread coming off. And then</p> <p>5 this side is just -- it's just very obvious. You know,</p> <p>6 it's just very obvious so --.</p> <p>7 Q If you follow the forward as installed arrow, the</p> <p>8 language of this document, Exhibit 6, first page, would</p> <p>9 indicate that the left-hand threaded cable needs to come</p> <p>10 off the forward end of the drum; right?</p> <p>11 A That would be -- yes. If you follow the picture</p> <p>12 with this, yes.</p> <p>13 Q As you finished your job and wrapped it, which</p> <p>14 threaded cable came off the front of the drum toward the</p> <p>15 nose of aircraft?</p> <p>16 A Well, I suppose it would be -- this is against</p> <p>17 a --.</p> <p>18 (The witness reviewed document.)</p> <p>19 A My God, it's been -- it's been a couple years</p> <p>20 since I did this so --.</p> <p>21 Q That's fine. Take your time.</p> <p>22 (The witness reviewed document.)</p>
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<p>1 on it -- basically a corrosion preventative was on there --</p> <p>2 and then proceeded to install -- well, then -- well,</p> <p>3 actually we had to wrap -- we wrapped the drum first, where</p> <p>4 I had made the Z mark was wrapped the drum -- we wrapped</p> <p>5 the drum. I don't know.</p> <p>6 Q And to wrap the drum, you need to be sure that</p> <p>7 the correct threaded end of the cable comes off of the</p> <p>8 forward or the back; right?</p> <p>9 A Right.</p> <p>10 Q Because as it turns one way, it's going to push</p> <p>11 or pull the tabs one direction versus the other --</p> <p>12 A Right.</p> <p>13 Q -- right?</p> <p>14 So did you use Exhibit 6 to do any of that?</p> <p>15 A Yeah, we used this exhibit right here. But what</p> <p>16 we did was -- I mean obviously you're aware of now. But we</p> <p>17 looked at the picture as obviously this side of the drum.</p> <p>18 That's pretty different. I mean that's what -- we used the</p> <p>19 picture, you know --.</p> <p>20 Q Did you notice the forward as installed arrow?</p> <p>21 A I don't recall if we noticed that or not. You</p> <p>22 know, I don't -- I don't recall if we noticed that or not.</p>	<p>1 A Well, I guess if you flip this thing around, then</p> <p>2 from the picture, there's just a -- they say the right-hand</p> <p>3 threads will come off.</p> <p>4 Q Off the front?</p> <p>5 A Uh-huh.</p> <p>6 Q Toward the nose?</p> <p>7 A Right.</p> <p>8 Q And is that what happened?</p> <p>9 A No, because, you know, whether we depicted it</p> <p>10 wrong or maybe read the forward install, I can't remember</p> <p>11 how it went. But, see, the thing -- the thing with this is</p> <p>12 that if it did -- if it did -- if the -- if the left-hand</p> <p>13 thread or the right -- the right-hand thread came off the</p> <p>14 wrong side, then the cables would have to cross at some</p> <p>15 point.</p> <p>16 Q To be able to attach to the turnbuckles --</p> <p>17 A Absolutely.</p> <p>18 Q -- in the back?</p> <p>19 A They wouldn't attach. They wouldn't attach.</p> <p>20 Q So are you saying that somewhere along the lines</p> <p>21 they got crossed?</p> <p>22 A No, I'm saying that they weren't crossed.</p>

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<p>1 Q You're confident that they were not crossed?</p> <p>2 A I'm positively confident. I -- I mean it was</p> <p>3 checked and double-checked, the routing of this thing.</p> <p>4 Q So if the NTSB's factual finding was that the</p> <p>5 right-hand thread came off the front of the drum and the</p> <p>6 cables were crossed to enable the turnbuckles to connect,</p> <p>7 you take issue with that?</p> <p>8 MR. DOMBROFF: Object to the form.</p> <p>9 Go ahead.</p> <p>10 A Do I take issue with that?</p> <p>11 BY MR. JONES:</p> <p>12 Q Yes.</p> <p>13 A Of course, I do.</p> <p>14 Q You disagree with that completely?</p> <p>15 A I absolutely disagree. What -- what -- whatever</p> <p>16 they say is whatever they say. What I know is correct.</p> <p>17 When I left the -- left to go home that day, it was</p> <p>18 correct.</p> <p>19 Q So you --</p> <p>20 A I know when I check something, triple-check,</p> <p>21 double-check, whatever it is, look at it once more before I</p> <p>22 walk out the door again because I feel strongly about it,</p>	<p>1 did it that way, one at a time, one section at a time.</p> <p>2 Q So you started at the pedestal and worked back?</p> <p>3 A Yes.</p> <p>4 Q Then did you send one side through first, then</p> <p>5 the other?</p> <p>6 A I -- I can't -- I definitely don't remember if we</p> <p>7 did them -- I believe we did it them one at a time. I</p> <p>8 can't remember if we did them one at a time or not.</p> <p>9 Q And what would be the purpose of doing them one</p> <p>10 at a time, as opposed to together?</p> <p>11 A Well, you can't mix it up that way. --</p> <p>12 Q So --</p> <p>13 A -- make sure you're on -- by looking at this</p> <p>14 picture, make sure you're on the right side of that one</p> <p>15 looking from this way and make sure you go over to the back</p> <p>16 side of this one and make sure you go to the bottom of this</p> <p>17 one and things like that.</p> <p>18 Q So when you started one of them down, you say,</p> <p>19 "All right. I'm on the front of the drum. This is the</p> <p>20 left-hand threaded cable. Here it comes."</p> <p>21 A Okay.</p> <p>22 Q Put it on the right one --</p>
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<p>1 then -- then I -- then I totally disagree and am very</p> <p>2 baffled when I wake up to a phone call of what happened,</p> <p>3 very baffled, you know.</p> <p>4 Q So you're confident that when this cable was</p> <p>5 installed, the left-hand threaded side of the cable came</p> <p>6 off the -- the forward side of the drum; correct?</p> <p>7 A Yes.</p> <p>8 Q And that there were no crosses between the drum</p> <p>9 and the turnbuckles?</p> <p>10 A I'm confident that there was no crosses between</p> <p>11 the drum and the turnbuckles.</p> <p>12 Q Who threaded the cables back through once you</p> <p>13 wrapped the drum?</p> <p>14 A Back through the pedestal and down through?</p> <p>15 Q Yes.</p> <p>16 A Scott and myself together.</p> <p>17 Q How'd you go about doing that?</p> <p>18 A I believe we -- I -- I believe he was just -- I</p> <p>19 was -- would be with on other side of where we were, the</p> <p>20 bulkhead or whatever; and he would hand it through and make</p> <p>21 sure that it was -- you know, "Hand this one through.</p> <p>22 Okay. Run that over this pulley on the T." I believe we</p>	<p>1 A Right.</p> <p>2 Q -- or the correct pulley?</p> <p>3 A Right.</p> <p>4 Q That's how you did it?</p> <p>5 A Right.</p> <p>6 Q And you were careful to say, "All right. This is</p> <p>7 the left-hand thread, and this is the right-hand thread,"</p> <p>8 as you put them through?</p> <p>9 A Yeah.</p> <p>10 Q And he said, "All right. I've a got the left.</p> <p>11 I'm going on this set of pulleys or this side of the</p> <p>12 pulleys," and worked all the way back to the turnbuckle?</p> <p>13 A Right.</p> <p>14 Q And then you came back and did the same thing</p> <p>15 with the other threaded side?</p> <p>16 A That's correct.</p> <p>17 Q And did you stay in the -- in the pedestal area</p> <p>18 that whole time?</p> <p>19 A No, we had to have move around, both of us, in</p> <p>20 order to work with each other threading them through those</p> <p>21 different little areas.</p> <p>22 Q So once you got it into the pedestal through the</p>

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<p>1 on the right side, the initial one.</p> <p>2 Q Following -- following the failure of the free</p> <p>3 play check?</p> <p>4 A No, following the -- the cable coming off the</p> <p>5 drum.</p> <p>6 Q Who took it out after the free play check failed?</p> <p>7 A Dominick.</p> <p>8 Q Item C of this checklist on Exhibit 20 calls for</p> <p>9 the removal of the entire elevator before you remove the</p> <p>10 actuator; correct?</p> <p>11 A Yes.</p> <p>12 Q Why was that not done?</p> <p>13 A Well, it was -- it wasn't done because it was</p> <p>14 just -- it was just -- you know, it was just -- basically</p> <p>15 it's there as a convenience factor. You got to use a lot</p> <p>16 of discretion, you know, in this manual. And we just --</p> <p>17 there's access panels you don't need; it's out of the way.</p> <p>18 It comes out fine and, you know -- and I mean that's about</p> <p>19 it.</p> <p>20 Q So basically you employed discretion as a</p> <p>21 mechanic to skip Item C?</p> <p>22 A Yes.</p>	<p>1 lines when pulling out the forward cable; correct? Exhibit</p> <p>2 6, page 3, item G.</p> <p>3 (The witness reviewed document.)</p> <p>4 A Okay.</p> <p>5 Q Correct?</p> <p>6 A Okay.</p> <p>7 Q You departed from that step; correct?</p> <p>8 A Correct.</p> <p>9 Q Does that departure differ from your departing</p> <p>10 from the -- the step that told you to remove the elevator</p> <p>11 before the actuator change?</p> <p>12 A Well, the -- if you were -- all right. In this</p> <p>13 manual the way it's set up, if you didn't use a lot of</p> <p>14 discretion at time and a lot of good judgment, you</p> <p>15 probably -- I mean you just -- you wouldn't get -- you</p> <p>16 know, you wouldn't be able to make it through a lot of</p> <p>17 these things, a lot of these procedures in here because</p> <p>18 it's so vague.</p> <p>19 So what -- what -- what difference is there if</p> <p>20 you -- Raytheon skips a step? It doesn't put something in</p> <p>21 there with me omitting a step. What's -- what is -- is</p> <p>22 there -- I mean that's -- that's the thing. Is -- is it --</p>
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<p>1 Q Were you reprimanded for that?</p> <p>2 A Yes, I was.</p> <p>3 Q Was anyone else?</p> <p>4 A Yes, Dominick was and -- and, I believe, Jeff.</p> <p>5 Q Vallejo?</p> <p>6 A Yes.</p> <p>7 Q And what form of reprimand were you given?</p> <p>8 A We were suspended for a week without pay.</p> <p>9 Q What were you told was wrong with having skipped</p> <p>10 that step?</p> <p>11 A Just that we didn't -- the only thing that was</p> <p>12 wrong with it is that -- well, basically, you know, you</p> <p>13 can't stray from manual; we didn't follow proper procedure,</p> <p>14 manual procedures.</p> <p>15 Q Not using the lead lines to replace the cable was</p> <p>16 also straying from the manual, wasn't it?</p> <p>17 A Well, that was -- you know, the -- the lead lines</p> <p>18 are just -- it was -- it was a piece of a step and not --</p> <p>19 we weren't deferring from a step. It was just to</p> <p>20 facilitate, like I said. It was just a -- to facilitate</p> <p>21 ease of cable installation.</p> <p>22 Q The maintenance manual directs you to use lead</p>	<p>1 if they were that -- if it were -- if they were that</p> <p>2 concerned about the step, then they wouldn't miss steps and</p> <p>3 they wouldn't have pictures drawn wrong in this thing too.</p> <p>4 Q Let me ask my question again: Did you skip</p> <p>5 Item G?</p> <p>6 A Yes, I did.</p> <p>7 Q And you skipped Item C in the removal of the</p> <p>8 elevator when you changed the actuator; correct?</p> <p>9 A Yes.</p> <p>10 Q You were reprimanded for skipping Item C on the</p> <p>11 actuator removal; correct?</p> <p>12 A Yes.</p> <p>13 Q The reason given for reprimanding you for doing</p> <p>14 that is you did not follow the maintenance manual --</p> <p>15 A Right.</p> <p>16 Q -- correct?</p> <p>17 Were you reprimanded for not following the</p> <p>18 maintenance manual in failing to use the lead lines under</p> <p>19 Item G?</p> <p>20 A No.</p> <p>21 Q Were you reprimanded for anything else associated</p> <p>22 with this maintenance, other than the failure to remove the</p>

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<p>1 elevator?</p> <p>2 A No.</p> <p>3 Q Did the failure to remove the elevator have</p> <p>4 anything to do, in your opinion, with the accident?</p> <p>5 A No.</p> <p>6 (The REPS No. 27-30-07 was marked Defendant's</p> <p>7 Exhibit No. 21 for identification.)</p> <p>8 BY MR. JONES:</p> <p>9 Q Exhibit 21 is a printout from the REPS manual of</p> <p>10 27-30-07. Can you tell me what this chapter is about?</p> <p>11 A It looks like the trim tab servo system.</p> <p>12 Q And that's the electric portion of the trim tab</p> <p>13 control; right?</p> <p>14 A Right.</p> <p>15 Q Did you do any work on the electric trim tab</p> <p>16 system?</p> <p>17 A No.</p> <p>18 Q Did you make use of this section in any way in</p> <p>19 doing some of the operational checks after the work that</p> <p>20 was done? And if you need time to take a look at the</p> <p>21 steps, that's fine.</p> <p>22 (The witness reviewed document.)</p>	<p>1 Q Would you look briefly again at Exhibit 16. This</p> <p>2 is the maintenance work order that was filled out and</p> <p>3 signed off on for the replacement of the cable; is that</p> <p>4 right?</p> <p>5 A Right.</p> <p>6 Q And did you fill out that whole thing or just</p> <p>7 part of it? I mean the front, top and bottom?</p> <p>8 A Yeah, top and bottom.</p> <p>9 Q And you signed off on it?</p> <p>10 A Yeah.</p> <p>11 Q And Jeff signed off as an inspector?</p> <p>12 A Right.</p> <p>13 Q And what's the bottom part say, I mean, in</p> <p>14 substance? What are you attesting to there?</p> <p>15 A I removed and replaced the forward section of the</p> <p>16 trim tab cable, and the operational check was okay. And I</p> <p>17 rigged it in accordance with the maintenance manual, and</p> <p>18 then the checks were okay.</p> <p>19 Q And how do you go about confirming what chapters</p> <p>20 of the maintenance manual you're using? You just look at</p> <p>21 the ones you're already printed off and were working with?</p> <p>22 A No. You just -- you would -- well, I mean</p>
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<p>1 A No, I didn't use this at all.</p> <p>2 Q When you checked the operation of the trim tabs</p> <p>3 after the work that was completed, did you run it manually</p> <p>4 and electrically?</p> <p>5 A Yes.</p> <p>6 Q And what was the reason for doing both?</p> <p>7 A Well, I mean, it's just kind of a common sense</p> <p>8 type of thing.</p> <p>9 Q You wanted to make sure that both are working?</p> <p>10 A Absolutely.</p> <p>11 Q And that both are working together properly?</p> <p>12 A Right.</p> <p>13 Q How did you go about running the electric version</p> <p>14 of it? Did you just run it through your paces because you</p> <p>15 knew how to operate it, or did you use some sort of a list?</p> <p>16 A I just ran it through the -- I just knew the</p> <p>17 procedure to check the disconnect and the pilot override</p> <p>18 and the -- the operation of it.</p> <p>19 Q And did your knowledge of that procedure come</p> <p>20 from having done work on that component of -- of the 1900</p> <p>21 before?</p> <p>22 A Yes.</p>	<p>1 because the operational check isn't in the one that you are</p> <p>2 working with, which usually it is right at the end -- I</p> <p>3 mean that's -- I guess --</p> <p>4 Q Sometimes it's in a different chapter?</p> <p>5 A No, they wouldn't put it in a totally different</p> <p>6 chapter.</p> <p>7 Q Or a different section of that chapter, I guess.</p> <p>8 A No. You wouldn't have an operational check of a</p> <p>9 trim cable in another section of the chapter, no.</p> <p>10 Q Well, what I guess I'm getting --</p> <p>11 A It would be --</p> <p>12 Q -- to here --</p> <p>13 A -- in the same section --</p> <p>14 Q -- is your reference the process for re- --</p> <p>15 replacing the cable was 27-30-06; right? And then you talk</p> <p>16 about the check you used was 27-30-05?</p> <p>17 A Okay.</p> <p>18 Q Is that right?</p> <p>19 A Right.</p> <p>20 Q Now, is --</p> <p>21 A That's -- well, rigged. Rigged. Rigged in</p> <p>22 accordance with 27-30-05.</p>

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<p>1 Q Okay.</p> <p>2 A So I rigged it in accordance with this chapter.</p> <p>3 Q Your operational check was in accordance with</p> <p>4 what?</p> <p>5 A Well, it's -- the operational check was just a</p> <p>6 standard practice, just a -- a regular standard operational</p> <p>7 check of the system. Just kind of a use -- you know, use</p> <p>8 your good judgment that the system works correctly.</p> <p>9 Q And what did you do to operationally check the</p> <p>10 flight control -- or the trim tab system after the cable's</p> <p>11 replaced and the second actuator was replaced?</p> <p>12 A Well, we did a -- did a rigging on it and checked</p> <p>13 the rigging for proper deflection and proper direction and</p> <p>14 then ran it through several times back and forth just</p> <p>15 manually, make sure things are smooth and then ran it</p> <p>16 through the whole electronic trim actuator check; the</p> <p>17 disconnect, the copilot-pilot override, and trim-on,</p> <p>18 trim-off type of thing.</p> <p>19 Q This was you and Dominick?</p> <p>20 A Yes.</p> <p>21 Q Scott had gone home; right?</p> <p>22 A Yes.</p>	<p>1 nose down, is one of the things you'd want to confirm is</p> <p>2 that the wheel stops at the proper place on the scale?</p> <p>3 A Oh, right, yeah, make sure it's -- yeah. On</p> <p>4 the -- on the wheel itself it has to stop at the proper</p> <p>5 place; and --</p> <p>6 Q If --</p> <p>7 A -- there's preestablished lines on the wheel.</p> <p>8 Q If the cable were rigged such that the left-hand</p> <p>9 thread came off the front of the drum and the cables were</p> <p>10 switched somewhere along the way back so that they could be</p> <p>11 connected, as the NTSB says was the case, what would your</p> <p>12 operational check show when you tried to go all the way one</p> <p>13 direction?</p> <p>14 MR. DOMBROFF: Object to the form.</p> <p>15 You can answer.</p> <p>16 A What would my operational check show if it was</p> <p>17 rigged like they said --</p> <p>18 BY MR. JONES:</p> <p>19 Q Yes.</p> <p>20 A -- backwards?</p> <p>21 Q Yes.</p> <p>22 A It would go probably in one direction past the</p>
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<p>1 Q Where were you and where was Dominick?</p> <p>2 A I was in the cockpit and Dominick was on the</p> <p>3 tail.</p> <p>4 Q So was it a similar system to what you had</p> <p>5 described when you did this rigging the first time where</p> <p>6 someone stood in the back and said, "Show me full down,"</p> <p>7 and the person in the cockpit would go full down?</p> <p>8 A No. I would -- at this -- well, yeah. It was</p> <p>9 very similar. But I was in the cockpit, and I ran the</p> <p>10 wheel all the way to one direction and asked him for the</p> <p>11 reading on that deflection and ran the wheel the other way,</p> <p>12 or to zero, verified zero again and then ran the wheel the</p> <p>13 other way and asked him for the reading on that deflection.</p> <p>14 Q Did you have to reindex the wheel?</p> <p>15 A No.</p> <p>16 Q What's it mean to reindex the wheel?</p> <p>17 A Reindex the wheel would mean, to me, that you</p> <p>18 would have to take it off and put it back on.</p> <p>19 Q And under what circumstances does that become</p> <p>20 necessary?</p> <p>21 A I don't think it would ever be necessary.</p> <p>22 Q So when you ran the wheel manually to all the way</p>	<p>1 lines that were there and in the other direction wouldn't</p> <p>2 make it anywhere, wouldn't go to the required limit, if it</p> <p>3 was rigged incorrectly.</p> <p>4 Q And you didn't see that?</p> <p>5 A No.</p> <p>6 Q That was not the case?</p> <p>7 A Not the case.</p> <p>8 Q Would it also run the tab in the opposite</p> <p>9 direction that you were turning the wheel?</p> <p>10 A If you ran the -- if you were running the</p> <p>11 wheel -- yes, it would run in the opposite direction if it</p> <p>12 was rigged backwards.</p> <p>13 Q And you're confident that when you did your check</p> <p>14 and your rigging, that it was moving in the right</p> <p>15 direction; correct?</p> <p>16 A Yeah.</p> <p>17 Q And the right distance?</p> <p>18 A Yeah.</p> <p>19 MR. JONES: We need --</p> <p>20 A I would see the wheel wrong; and I would hear the</p> <p>21 wrong type of deflection reading, which was totally</p> <p>22 opposite for up and down, very different from Dominick.</p>

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1 A No.	1 A -- wheel positions.
2 Q It's only back there --	2 Yes. Exactly.
3 A Right.	3 Q If the cable had been rigged as the NTSB says it
4 Q -- at the cable stop --	4 was and you ran the electric trim up, which way would the
5 A Right.	5 wheel turn?
6 Q -- or the actuator itself that would bottom out;	6 MR. DOMBROFF: Object to the form.
7 right?	7 A The opposite direction.
8 A Right.	8 BY MR. JONES:
9 Q Now, does the actuator ever bottom out at the end	9 Q When you used the electric system, did you run it
10 of its travel; or is it being stopped from hitting the end	10 all the way through its range of motion, up and down?
11 of its travel by the cable stop?	11 A Yes.
12 A I believe it's being stopped by the cable stop	12 Q And confirm the correct degrees' deflection back
13 from hitting that if it's traveling.	13 on the surface?
14 Q Now, if that cable stop were out of place, do you	14 A Yes.
15 know how much further the actuator will take the surface	15 Q And you used Dominick to do that, reading the
16 before the actuator bottoms out?	16 digital protractor?
17 A No, I don't know.	17 A Right.
18 Q You've never seen that or done that?	18 Q And you're doing that, using the steps in the
19 A No.	19 REPS manual for the rigging check, right, which is --.
20 Q No reason to, is there?	20 (Counsel reviewed documents.)
21 A No.	21 Q -- in Exhibit 14; is that right?
22 Q When you did the test of the trim tab system	22 A 14.
Page 131	Page 133
1 after the replacement of the cable and the second actuator,	1 Q Refer to me the -- the page where the steps are
2 you say you used the electric trim system as well; right?	2 for checking the -- the degree deflection in the travel.
3 A Right.	3 A This is the degree deflection in Step F.
4 Q When you ran the electric system, did you watch	4 Q Page 2 of 14?
5 the manual wheel to see which direction it went?	5 A Right, page 2 of Exhibit 14.
6 A Ran the electric system, I watched -- yeah,	6 Q Now, when you work down a checklist like this, do
7 that's how I see which direction. I mean other than that,	7 you -- do you check it on off on the one you've printed?
8 there's no indication.	8 A I think sometimes I would, depending on what I
9 Q Well, someone in the back could tell you which	9 was working on. I -- I don't -- you know --
10 way the tab's going?	10 Q Do you --
11 A Right. But if you're -- right. But when you're	11 A -- if I was stepping away from it. But in the
12 just checking with the manual system, you're watching the	12 case of this, I wasn't stepping away from the whole rigging
13 wheel.	13 procedure; so I didn't check off.
14 Q Do you remember specifically having run the	14 Q Oh, you remember not having checked off these
15 electric system and looking at the wheel?	15 items?
16 A Yes.	16 A I believe I didn't check off these items.
17 Q To confirm that when you went up with the	17 Q In the event when you do check off items on a
18 electric, the wheel went up?	18 REPS page as distinct from a work card, are you to keep for
19 A When you're up with the electric, the wheel went	19 the maintenance package the paperwork?
20 back, which is up. Well, up -- up on the -- up is up. I'm	20 A This?
21 not going to confuse button decisions and --	21 Q The copy that has the check-off?
22 Q I know what you mean.	22 A No.

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 7

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

-x

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COLGAN AIR, INC.,

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Plaintiff. : :

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vs. : Civil Action

: No. 1:05 cv 213

RAYTHEON AIRCRAFT COMPANY.

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Defendant . . .

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McLean, Virginia

Thursday, June 23, 2005

Videotaped deposition of SCOTT SERVIS, witness, called for examination by counsel for the defendant, pursuant to notice, at the offices of Mark A. Dombroff, Esq., Dombroff & Gilmore, P.C., 1676 International Drive, Penthouse, McLean, Virginia, before Malynda D. Whiteley, a Registered Professional Reporter and a notary public in and for the State of Virginia, beginning at 9:14 a.m., when were present on behalf of the respective parties:

Page 6	Page 8
<p>1 Q Well, it's a pretty simple format. I just ask 2 you questions; you provide me an answer.</p> <p>3 We're obviously taking it by videotape today.</p> <p>4 Since I'm sitting next to you, you're naturally going to 5 look at me. But to the extent you can at least keep some 6 bit of your attention toward the camera, that might be 7 helpful too to allow us to have a better record when we're 8 done.</p> <p>9 Is that fair?</p> <p>10 A Right.</p> <p>11 Q We're going to be moving pretty quickly today 12 because we've got several people we want to take, so we'll 13 probably not be a long time with you. But if you need a 14 break, let me know; and we'll just -- we'll deal with that 15 as it goes.</p> <p>16 Is that fair?</p> <p>17 A Yes.</p> <p>18 Q Tell us your full name, please.</p> <p>19 A Scott Neil Servis.</p> <p>20 Q Where are you employed?</p> <p>21 A Colgan Air.</p> <p>22 Q What do you do there?</p>	<p>1 Q -- license?</p> <p>2 A -- I went to East Coast Aerotech in Lexington, 3 Massachusetts.</p> <p>4 Q And when did you do that?</p> <p>5 A When?</p> <p>6 Q Yeah, when?</p> <p>7 A That was '86.</p> <p>8 Q Tell us a little bit about that process. What's 9 it take to become an aviation mechanic?</p> <p>10 A It's a -- not quite -- I think it's 18 -- at the 11 time it was an 18-month school that you had to go through.</p> <p>12 Q Is it full-time, or is it something you can do 13 while you're working?</p> <p>14 A Technically it's -- I went full-time and also 15 worked.</p> <p>16 Q What types of things did they teach you there, 17 just generally?</p> <p>18 A Everything to do with aviation from A to Z. I 19 guess they -- you know, they take anyone off the street. I 20 mean they can -- because they run you through everything so 21 you can get your license.</p> <p>22 Q Did you have previous mechanical experience</p>
Page 7	Page 9
<p>1 A Aircraft mechanic.</p> <p>2 Q What's your residential address?</p> <p>3 A It's [REDACTED]e, Plymouth, 4 Massachusetts.</p> <p>5 Q Social Security number?</p> <p>6 A [REDACTED]</p> <p>7 Q How long have you worked at Colgan?</p> <p>8 A I think it's about 12 years.</p> <p>9 Q Doing the same thing the whole time pretty much?</p> <p>10 A Pretty much, yes.</p> <p>11 Q Tell us a little bit about your background in 12 aviation before having come to Colgan, including your 13 training.</p> <p>14 A I've worked for Continental -- Continental 15 Express, which also used to be Bar Harbor Airways, which 16 when -- the company went through several name of changes 17 when I first started in aviation. I also worked for an 18 overhaul facility in between, Atlantic Aerosport.</p> <p>19 I'm not sure what you want for training.</p> <p>20 Q Before you started with either one of those, did 21 you get your -- your license, your mechanic's --</p> <p>22 A Yeah --</p>	<p>1 before you started in on that?</p> <p>2 A Yes.</p> <p>3 Q What kinds of work?</p> <p>4 A In automotive.</p> <p>5 Q Had you had any exposure to the aviation world 6 before seeking your --</p> <p>7 A No --</p> <p>8 Q -- license?</p> <p>9 A -- no.</p> <p>10 Q And what sort of license do you end up with?</p> <p>11 What's it called?</p> <p>12 A Air framing, power plant.</p> <p>13 Q That's what they call an A and P?</p> <p>14 A Right.</p> <p>15 Q When did you get that?</p> <p>16 A It was '88. I forgot the exact -- it was about 6 17 of '88, I believe, but -- somewhere in there.</p> <p>18 Q Any other formalized training besides your A and 19 P school that you received before reaching Colgan as an 20 employer?</p> <p>21 A It's -- for colleges per se, no. I mean like 22 with -- with Bar Harbor and Continental Express, I've done</p>

Page 10	Page 12
<p>1 several company schools over the year (sic). I mean 2 company schools and factory training schools for different 3 aircraft that are -- that Colgan doesn't fly but --.</p> <p>4 Q Had you had any training in Beechcraft 1900 5 airliners prior to coming to Colgan?</p> <p>6 A Yes.</p> <p>7 Q Where did you have that?</p> <p>8 A That would be Bar Harbor Airways.</p> <p>9 Q What training on the 1900 did you take?</p> <p>10 A It's the -- I believe at the time it was a -- it 11 was a two-week -- it was, like, an 80-hour class that 12 everyone had to do, you know, through the company. They 13 had a -- a trainer inside the company that would, you 14 know --</p> <p>15 Q Inside Bar Harbor --</p> <p>16 A It's --</p> <p>17 Q -- or was it a Raytheon --</p> <p>18 A That was -- that was on the site of Bar Harbor. 19 It was the company's own training class that they had that 20 everyone had to go through.</p> <p>21 Q How long of a class was that?</p> <p>22 A It was 80 hours, I believe.</p>	<p>1 just --</p> <p>2 BY MR. JONES:</p> <p>3 Q Well, do they teach you anything at A and P 4 school about how you perform a given repair task when you 5 have a maintenance manual to follow?</p> <p>6 A If they -- generally they say it's -- you have to 7 you know -- you read the manual and work out of the manual 8 if there's a procedure for it.</p> <p>9 Q And the manual typically gives you step-by-step 10 instructions about what to do?</p> <p>11 A Usually.</p> <p>12 Q And if it's in the manual, do they teach you at A 13 and P school to do the step -- each step in the list?</p> <p>14 A Yes.</p> <p>15 Q So if it's there, you're supposed to do it?</p> <p>16 A Right.</p> <p>17 Q Now, when you work with a maintenance manual to 18 perform a given task, is everything you need to do always 19 in the list?</p> <p>20 A No.</p> <p>21 Q So are you needing to employ some discretion as a 22 mechanic or some just know-how as a mechanic to do the</p>
Page 11	Page 13
<p>1 Q What types of things did it cover?</p> <p>2 A Everything, all systems of the aircraft.</p> <p>3 Q So it was specific to the 1900?</p> <p>4 A Specific to the 1900. And at the time it was -- 5 I think at the time it was 1900B and C models, at the time 6 frame because Ds didn't exist.</p> <p>7 Q And the plane we're talking about here today is a 8 1900D; right?</p> <p>9 A Correct.</p> <p>10 Q So this training you got back with Bar Harbor on 11 the 1900, it was specific to the 1900; so it assumed that 12 you had some base level experience and knowledge as an A 13 and P; right?</p> <p>14 A Correct.</p> <p>15 Q At A and P school what do they teach you just 16 generally about completing a given task of maintenance when 17 you have a maintenance manual you're to be working with?</p> <p>18 MR. DOMBROFF: I'm going to object; the 19 question's vague.</p> <p>20 If you're able to understand it, go ahead and 21 answer it.</p> <p>22 A I mean it's -- I mean can you rephrase it or</p>	<p>1 things that aren't in the list?</p> <p>2 A Yes, you do.</p> <p>3 Q Can you describe for me some of the things that 4 typically aren't on the list that you have to employ your 5 own discretion for?</p> <p>6 A Not offhand.</p> <p>7 Q It's going to vary depending on the type of task 8 you're doing, isn't it?</p> <p>9 A Correct.</p> <p>10 Q What do they teach you at A and P school about 11 when you're working on flight controls in an aircraft -- 12 and I guess first let's start with this: Explain to the 13 jury what -- what the flight controls on a plane are.</p> <p>14 A Flight controls control the altitude of the 15 aircraft, roll, pitch, yaw, depending on which control 16 system you're referring to.</p> <p>17 Q So could ailerons -- what do they control?</p> <p>18 A If you just give me a manual or something so I 19 can look at it. I'm not --</p> <p>20 Q Okay. You're --</p> <p>21 A -- you know --</p> <p>22 Q -- you're not a pilot; is that right?</p>

Page 14	Page 16
<p>1 A I'm not a pilot, no.</p> <p>2 Q You're a mechanic.</p> <p>3 You have ailerons; you have rudders, elevators --</p> <p>4 A Elevators and trim tabs.</p> <p>5 Q -- and trim tabs?</p> <p>6 A Different surfaces.</p> <p>7 Q And trim tabs could be on the tail or on the</p> <p>8 wings; right?</p> <p>9 A Right.</p> <p>10 Q Those are typically control surfaces?</p> <p>11 A Right.</p> <p>12 Q And a control system is those surfaces attached</p> <p>13 to the different components of the plane that move them; is</p> <p>14 that fair?</p> <p>15 A Correct.</p> <p>16 Q In your training as an A and P, are you told that</p> <p>17 the control systems of an aircraft are especially critical?</p> <p>18 A Yes.</p> <p>19 Q What do they tell you about that?</p> <p>20 A It means it's obviously a critical -- a part of</p> <p>21 the aircraft is what controls your -- it's the only control</p> <p>22 you have of the aircraft so --.</p>	<p>1 Q Are you taught in A and P school that there's</p> <p>2 some value when you disconnect cables to keep tension on</p> <p>3 the rest of the cable system when you disconnect them so</p> <p>4 that you don't cause problems elsewhere down the line?</p> <p>5 A Yes.</p> <p>6 Q They -- they teach that at the very beginning,</p> <p>7 huh?</p> <p>8 A That's -- they might have. It's a -- it's a</p> <p>9 general thing. I mean it's -- if you ask me specifically</p> <p>10 do I remember from A and P school 15 odd years ago, no I</p> <p>11 don't. But --</p> <p>12 Q Well, I'm sure?</p> <p>13 A -- I mean it's a general practice.</p> <p>14 Q But it makes sense?</p> <p>15 A Yeah --</p> <p>16 Q You --</p> <p>17 A -- you don't want cables --</p> <p>18 Q You don't want cables loose elsewhere along the</p> <p>19 run?</p> <p>20 A Right.</p> <p>21 Q What can happen, for example, if they are loose</p> <p>22 along the run?</p>
Page 15	Page 17
<p>1 Q So are you taught that whenever you do repairs to</p> <p>2 a flight control system on an airplane, you want to make</p> <p>3 sure when you're done that it functionally works the way</p> <p>4 it's supposed to?</p> <p>5 A Yes.</p> <p>6 Q So you know as an A and P going in, without</p> <p>7 having been told in a given manual, that you're supposed to</p> <p>8 do a functional check of that control system after working</p> <p>9 on it; right?</p> <p>10 A That sounds right.</p> <p>11 Q And where do you go to decide what functional</p> <p>12 check to do once you work on a control system?</p> <p>13 A To the maintenance manual for that type of</p> <p>14 aircraft.</p> <p>15 Q In a 1900 the flight controls are typically moved</p> <p>16 by cable and pulley systems, aren't they?</p> <p>17 A Yes.</p> <p>18 Q Mechanical systems?</p> <p>19 A Yes.</p> <p>20 Q And from time to time you have to disconnect some</p> <p>21 of those cables to do work on the systems?</p> <p>22 A Yes.</p>	<p>1 A It could come off a pulley theoretically.</p> <p>2 Q So what's the process that you use to keep the</p> <p>3 tension on the cable? Let's say if you're working the far</p> <p>4 back of plane on a cable that runs all the way to the</p> <p>5 front. You need to disconnect it back here to do</p> <p>6 something. What's the process you use to keep the tension</p> <p>7 toward the front of the plane on the cable?</p> <p>8 A You have to -- you -- you pinch of cables in</p> <p>9 between usually two wooden or phenolic type blocks. You --</p> <p>10 Q Phenolic? Could you tell us what that is?</p> <p>11 A It's -- it's a material that's -- I don't even</p> <p>12 know. I couldn't tell you the chemical composition.</p> <p>13 It's -- it's --</p> <p>14 Q Well --</p> <p>15 A -- it's kind of like plastic, but it's not. I</p> <p>16 really don't know what it is. You know, it's a -- it's</p> <p>17 phenolic.</p> <p>18 Q Just in a very basic level.</p> <p>19 A It --</p> <p>20 Q We're using terms here that the --</p> <p>21 (Proceedings participants speaking at the same time.)</p> <p>22 A It looks --</p>

Page 18	Page 20
<p>1 THE COURT REPORTER: Excuse me.</p> <p>2 MR. DOMBROFF: Whoa, whoa.</p> <p>3 MR. JONES: Yes, ma'am.</p> <p>4 Yeah. We need to --</p> <p>5 (Proceedings participants speaking at the same time.)</p> <p>6 MR. DOMBROFF: Let me --</p> <p>7 MR. JONES: -- talking over each other, if we</p> <p>8 can.</p> <p>9 MR. DOMBROFF: Yeah. You've got to let him</p> <p>10 finish his answers.</p> <p>11 Go ahead.</p> <p>12 A It's -- it looks like brown plastic.</p> <p>13 BY MR. JONES:</p> <p>14 Q Okay.</p> <p>15 A That's the best I can describe it.</p> <p>16 Q That's all I'm really after because the jury's</p> <p>17 not necessarily going to understand when we use terms like</p> <p>18 that.</p> <p>19 But okay. You use a piece of wood or a phenolic</p> <p>20 block or somebody to -- what? -- clamp against?</p> <p>21 A Right.</p> <p>22 Q Somewhere downstream or upstream of where you're</p>	<p>1 to complete your work?</p> <p>2 A Yes.</p> <p>3 Q How often do you do that?</p> <p>4 A You don't -- you don't have to refer to the FARs</p> <p>5 themselves. You don't usually need to.</p> <p>6 Q What materials are you typically looking at</p> <p>7 instead?</p> <p>8 A The aircraft maintenance manual. Or company also</p> <p>9 has work cards for certain procedures, not all of them</p> <p>10 but --.</p> <p>11 Q Now's a good time to talk about that generally.</p> <p>12 I want you to help us understand, if you can, the systems</p> <p>13 within Colgan; the manuals used, the terminology used</p> <p>14 internally with the company, the forms and whatnot.</p> <p>15 And what I've done to begin with is I've set in</p> <p>16 front of you what we've marked as Exhibit No. 1. And that</p> <p>17 is a copy of the first three sections of the -- of the</p> <p>18 Colgan Air general maintenance manual, which we've seen --</p> <p>19 called GMM --</p> <p>20 A Right.</p> <p>21 Q -- here and there.</p> <p>22 MR. JONES: I've got a copy here. I'm sorry,</p>
<p>1 working?</p> <p>2 A Correct.</p> <p>3 Q And the materials and equipment to do that are</p> <p>4 available to you as a mechanic at Colgan?</p> <p>5 A Yes.</p> <p>6 Q And always have been?</p> <p>7 A Yes.</p> <p>8 Q And would be also to the other mechanics --</p> <p>9 A Yes, it. --</p> <p>10 Q -- right?</p> <p>11 A -- would be.</p> <p>12 Q In A and P school did they teach you any of the</p> <p>13 detail of federal aviation regulations that you need to</p> <p>14 follow and comply with?</p> <p>15 A Yes.</p> <p>16 Q Are you familiar from your A and P training with</p> <p>17 any federal aviation and regulations that speak to work on</p> <p>18 flight controls systems?</p> <p>19 A It's -- I know there's stuff there. I couldn't</p> <p>20 quote you specifically.</p> <p>21 Q In your work as an A and P, are you -- do you</p> <p>22 have access to the regulations to go see, if you need them</p>	<p>1 counsel, this is one --</p> <p>2 MR. DOMBROFF: That's okay.</p> <p>3 MR. JONES: I don't have a copy here for you.</p> <p>4 It's pretty bulky, and we only copied part of it.</p> <p>5 BY MR. JONES:</p> <p>6 Q Something that your counsel produced to us. Its</p> <p>7 first page is C00087.</p> <p>8 Can you tell us what this document is?</p> <p>9 A It's the GMM. It's the general operating rules</p> <p>10 for the company, for the maintenance. It has most what of</p> <p>11 you need for -- you know, for maintenance of aircraft; you</p> <p>12 know, policies, procedures. And the forms are in there too</p> <p>13 for certain things.</p> <p>14 Q So these are intercompany policies about how you</p> <p>15 perform maintenance at Colgan?</p> <p>16 A Yes.</p> <p>17 Q In addition to this reference, what else do you</p> <p>18 use there to get your job done?</p> <p>19 A The aircraft maintenance manual, which is</p> <p>20 actually -- it's not paper; it's on a CD; it's on a</p> <p>21 computer, which is just -- it's just the aircraft</p> <p>22 maintenance manual. It has all the chapters in it for all</p>

Page 66	Page 68
<p>1 workdays like that.</p> <p>2 Q Had you had any issues going on at home during</p> <p>3 this time frame, any particular stresses in your life?</p> <p>4 A No.</p> <p>5 Q All right. You came to work about 3:40 in the</p> <p>6 afternoon on Monday, the 25th. Someone, perhaps Perry,</p> <p>7 told that you this task was in front of you to deal with,</p> <p>8 the fact that the cable had come off this drum -- which is</p> <p>9 an elevator trim cab cable --</p> <p>10 A Correct.</p> <p>11 Q -- right?</p> <p>12 How did you set out to go about dealing with this</p> <p>13 problem?</p> <p>14 A This was -- when I came in, this was -- these</p> <p>15 components were already removed from the pedestal that are</p> <p>16 mounted --</p> <p>17 Q "These" being --</p> <p>18 A The --</p> <p>19 Q -- the drum itself?</p> <p>20 A The drum, the cover --</p> <p>21 Q The guard too?</p> <p>22 A The guard. There's a shaft that -- there's a</p>	<p>1 know what the exact winding on it is. I --.</p> <p>2 Q Is it -- it's certainly stiffer than the string;</p> <p>3 right?</p> <p>4 A Yes, much stiffer than the string.</p> <p>5 Q Is it of a nature that wants to spread out --</p> <p>6 A Yes.</p> <p>7 Q -- when it's loose?</p> <p>8 A Yes.</p> <p>9 Q So if tension is let up on it, it's going to want</p> <p>10 to spring out off the cable --</p> <p>11 A Right.</p> <p>12 Q -- or off the drum?</p> <p>13 A Correct.</p> <p>14 Q And was there any discussion when you learned</p> <p>15 that this had become kinked about how it had become kinked?</p> <p>16 A I'm not sure they -- they thought it had</p> <p>17 something to do with an actuator they put in. But I</p> <p>18 wasn't -- I wasn't sure of what -- what -- how that would</p> <p>19 cause the problem. I was -- I really didn't investigate</p> <p>20 it.</p> <p>21 Q Your task was not to figure out why it happened,</p> <p>22 but rather to fix it?</p>
Page 67	Page 69
<p>1 common shaft that it all sets on. I don't recall the rest</p> <p>2 of the components. There's some shims and bolts and</p> <p>3 stuff that --</p> <p>4 Q Sprockets and a chain that goes to the trim</p> <p>5 wheel?</p> <p>6 A Yeah. The chain is -- was in place. The chain,</p> <p>7 I don't believe, was ever removed because the chain is --</p> <p>8 it's -- it's a solid loop. The actual -- there's a little,</p> <p>9 miniature bicycle chain. And that -- that was still in the</p> <p>10 pedestal. That chain itself was not removed from the</p> <p>11 aircraft.</p> <p>12 Q But it was loose from the shaft --</p> <p>13 A Right --</p> <p>14 Q -- because it had to be --</p> <p>15 A -- it had.</p> <p>16 Q -- right?</p> <p>17 A Right, because there's a sprocket on it. Right.</p> <p>18 Q And just for example -- example purposes, since</p> <p>19 we've got the part here, this is string; this isn't the</p> <p>20 regular cable that goes in there. But can you describe</p> <p>21 what the cable is like that goes in there?</p> <p>22 A It's a -- it's a stainless steel cable. I don't</p>	<p>1 A Correct.</p> <p>2 Q Did you form any opinion about how else it could</p> <p>3 have happened?</p> <p>4 A No.</p> <p>5 Q Does it make sense that it could have happened</p> <p>6 with tension coming off of here and binding up between the</p> <p>7 grooves of this and the inside of the guard?</p> <p>8 A Possibly.</p> <p>9 Q What then did you do to take on the task?</p> <p>10 A I believe -- I think they -- I believe they had</p> <p>11 already ordered the part, but they must have -- they had to</p> <p>12 have already ordered because this -- this cable isn't</p> <p>13 something we've normal have in stock in the parts room.</p> <p>14 Q The cable itself?</p> <p>15 A The cable itself, yeah. It's -- it's not a</p> <p>16 common -- you know, it's not something you normally change.</p> <p>17 And the part was there, so they must have already</p> <p>18 ordered the part, and it was physically in the building.</p> <p>19 And then they we started working on removing the</p> <p>20 cable from the aircraft.</p> <p>21 Q And who is "we"?</p> <p>22 A Myself and Dan.</p>

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<p>1 Q Dan Kinan?</p> <p>2 A Yes.</p> <p>3 Q And what's his -- what was his title at the time?</p> <p>4 A I don't recall. He's a mechanic. And I -- I</p> <p>5 don't know if he was lead mechanic or not at that -- at</p> <p>6 that point.</p> <p>7 Q Now, "lead" just denotes a level of mechanic, not</p> <p>8 necessarily who's leading a particular task; is that right?</p> <p>9 A Correct.</p> <p>10 Q Were you a lead mechanic at the time?</p> <p>11 A Yes.</p> <p>12 Q So you two together may have been leads?</p> <p>13 A Right.</p> <p>14 Q Now, is there one of you on a task like this</p> <p>15 that's in charge of it; or are you both on equal plane?</p> <p>16 A We were both just working together.</p> <p>17 Q So what do you start with? Do you get go get a</p> <p>18 work card?</p> <p>19 A There is no -- there's no work card in the book</p> <p>20 for changing this --</p> <p>21 (Proceedings participants speaking at the same time.)</p> <p>22 Q This is --</p>	<p>1 Q And you can confirm from looking at this document</p> <p>2 that is from Rev. 9?</p> <p>3 A Yes.</p> <p>4 Q This is a print out of chapter 27-30-04 of the</p> <p>5 REPS manual in the 1900D?</p> <p>6 Is this what you would have gone to the computer</p> <p>7 system to print off?</p> <p>8 A Yes.</p> <p>9 Q So these -- these five pages you would have taken</p> <p>10 back with you to your work space; is that right?</p> <p>11 A Correct.</p> <p>12 Q Do you have a -- a podium or something you set</p> <p>13 them on as you're doing work?</p> <p>14 A Typically I just -- mostly -- most guys just put</p> <p>15 it on top of their toolbox. You know, you roll your</p> <p>16 toolbox to the area of the aircraft you're working on. And</p> <p>17 mine happens to be just a large flat area. The way it's</p> <p>18 set up, I just put the paperwork on top of it.</p> <p>19 Q So between you and Dan was it you or was it him</p> <p>20 who went to get the REPS manual -- information?</p> <p>21 A I don't remember.</p> <p>22 Q Between you and him, which one of you would have</p>
<p>1 A -- pulling a work card.</p> <p>2 Q Because this isn't done very often?</p> <p>3 A Correct.</p> <p>4 Q So you go to the -- to the REP system?</p> <p>5 A Right; go to the manual.</p> <p>6 Q And then do you what?</p> <p>7 A We printed off the section -- I don't recall what</p> <p>8 it says. But there's a section that says -- for changing</p> <p>9 the trim cable. I believe it refers to the entire system;</p> <p>10 but they break it down into, like, fore and aft. But it's,</p> <p>11 like -- but it is in there somewhere.</p> <p>12 MR. JONES: Let's pause to mark one of them.</p> <p>13 (The REPS No. 27-30-04 was marked Defendant's</p> <p>14 Exhibit No. 6 for identification.)</p> <p>15 BY MR. JONES:</p> <p>16 Q Mr. Servis, we've now marked Exhibit 6, which is</p> <p>17 the printout from REPS of the Revision 9, which was the one</p> <p>18 in use at the time.</p> <p>19 First of all, let's make sure we're in agreement.</p> <p>20 Was Revision 9 the one that was in -- in place at the time</p> <p>21 you did this work?</p> <p>22 A Yes.</p>	<p>1 been following the paperwork?</p> <p>2 A Both of us were.</p> <p>3 Q Do you sit down when you get one of these and</p> <p>4 read it from front to back before you start work?</p> <p>5 A Yeah, we read through it. I mean -- I mean I</p> <p>6 remember us getting this and, you know -- you know, looking</p> <p>7 at the pictures in it and then reading through the section,</p> <p>8 you know, and then just starting on the job.</p> <p>9 Q Now, this is a task that requires you to get</p> <p>10 access to parts of the plane that you wouldn't ordinarily</p> <p>11 be able to reach --</p> <p>12 A Correct.</p> <p>13 Q -- right?</p> <p>14 So things have to be taken out?</p> <p>15 A Yes.</p> <p>16 Q Did you perform that work?</p> <p>17 A Yes.</p> <p>18 Q And what types of things were taken out?</p> <p>19 A I'm trying -- the only -- I think the only thing</p> <p>20 that really had to be removed was -- I believe it's one --</p> <p>21 it's been so long, I just -- I don't recall. It's either</p> <p>22 one pulley or one set of pulleys that have to be unbolted</p>

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<p>1 method of removing the cable those that you've already 2 expressed, the fear of cracking a pulley --</p> <p>3 A Yes.</p> <p>4 And pulling the lead lines back through, because 5 it's -- it's very easily (sic) for the wires to get tangled 6 up in them because the pulleys are -- they're bolted 7 together; they're very close together, you know, because -- 8 it's two independent pulleys, but there's a very small gap 9 in between the two of them.</p> <p>10 And the wire -- you know, this -- this is a 11 16th-inch diameter wire that runs the trim system. I don't 12 believe it will fall in between the pulleys. But if you're 13 using just a guide wire to pull through with, it's much 14 smaller diameter typically. They could easily fall in 15 between the jamb in between the pulleys.</p> <p>16 Q When you utilize lead lines, do you typically use 17 smaller gauge safety wire?</p> <p>18 A Typically yes.</p> <p>19 Q Do you have anything else available to you?</p> <p>20 A Nah, there's -- there's no --</p> <p>21 Q Could you have used string?</p> <p>22 MR. DOMBROFF: Wait, wait, wait a minute. Let</p>	<p>1 Q Meaning its diameter might shrink as it -- as it 2 stretched?</p> <p>3 A Yeah. I mean if you -- you pull the string in 4 between two tight pieces, you can easily pull it between 5 the pulleys; whereas, the steel, the stainless cable that 6 we use, you can't do that.</p> <p>7 Q Had you ever cracked pulley using wire as a lead 8 line before?</p> <p>9 A I don't think so.</p> <p>10 Q Had you ever talked to anybody at Colgan who had?</p> <p>11 A At Colgan? No.</p> <p>12 Q All right. Having decided to not use the lead 13 lines, what method did you employ to ensure that you got 14 the cables back in there right?</p> <p>15 A Let's see. Before -- because before I ever 16 pulled any of the pins on the cables, I went back and at 17 every -- every junction where there's a pulley I put a 18 letter T denoting the top. And I forgot exactly which 19 pulley I started with.</p> <p>20 Q What did "top" mean to you?</p> <p>21 A Whatever pulley I had started with had a -- 22 there -- there must have been an orientation sideways like</p>
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<p>1 him finish --</p> <p>2 MR. JONES: I'm sorry.</p> <p>3 MR. DOMBROFF: -- his --</p> <p>4 MR. JONES: I apologize.</p> <p>5 A There's no -- there -- there is no -- there is no 6 larger gauge wire available to use for lead lines. I mean 7 This is not -- the company -- I've never worked at a place 8 where they stocked, you know, lead line the same size as 9 the cable you're pulling because it's -- it kind of defeats 10 the purpose. I mean you're pulling twice the weight and 11 twice the -- you know, you're -- you're trying to move 12 smaller cable through just because it's easier -- excuse 13 me -- it's just easier to work with.</p> <p>14 BY MR. JONES:</p> <p>15 Q Does this string that we're using as an example 16 approximate the diameter of the cable itself?</p> <p>17 A Yes.</p> <p>18 Q So could you have used string like this?</p> <p>19 A I suppose you could have.</p> <p>20 Q And it being this wide wouldn't have fallen 21 between the pulleys; right?</p> <p>22 A Being soft string it would because it stretches.</p>	<p>1 this where there was a top and a bottom, very obvious. And 2 I put a T on that one.</p> <p>3 And then because -- Dan had disconnected the 4 cables, the turnbuckles. And then he'd pull on one end of 5 the cable; and I had my hand on the other end of the cable; 6 so we were -- we were verifying that we were moving the 7 same cable, you know, when we came to each junction.</p> <p>8 Q Which end did you start at?</p> <p>9 A I was up towards the pedestal, up here because --</p> <p>10 Q Were you not, then, with this first set of 11 pulleys? because it's not oriented -- stacked on top of 12 each --</p> <p>13 A No, it's -- I believe it's -- I want to say I 14 believe you start -- I -- I believe this is the one I 15 started with just inside the cabin door -- was this one 16 right here.</p> <p>17 Q Is that the one, two, three, four, fifth one?</p> <p>18 A I believe so, yeah, because, like, this one's at 19 an angle. It's about a 45-degree angle.</p> <p>20 Q "This one" being the fourth one?</p> <p>21 A That -- the fourth one. And this one here is 90 22 degrees, I believe.</p>

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<p>1 Q So you marked --</p> <p>2 A It's hard to see from this picture.</p> <p>3 Q So you marked the top --</p> <p>4 A Of this one here. It's just -- it's, like, just</p> <p>5 inside the -- as you step in the -- in the -- this picture</p> <p>6 here not very -- it doesn't give you a real good reference</p> <p>7 as far as in the aircraft.</p> <p>8 But just inside the -- when you go just inside of</p> <p>9 the cabin doors, you enter into the aircraft; and a little</p> <p>10 bit -- maybe, you know, 2 or 3 feet down the run -- because</p> <p>11 just as you come in the cabin door of the aircraft, this --</p> <p>12 this pulley here, which would be the fourth one, which is</p> <p>13 at an angle -- it's, like, almost a 45-degree angle.</p> <p>14 And then the next one is 90 degrees. I believe</p> <p>15 that's just for convenience. It's just where I happened to</p> <p>16 be at that time.</p> <p>17 Q So that's where you started?</p> <p>18 A That's where I just happened to start, yes.</p> <p>19 Q And since you decided to use the top-bottom</p> <p>20 approach --</p> <p>21 A Right.</p> <p>22 Q -- was your assumption starting this job that all</p>	<p>1 MR. JONES: Oh, I got you (addressing Mr. Hall.)</p> <p>2 A I mean if you look in the aircraft flight manual,</p> <p>3 I mean there might be. Like this here, I think it lays out</p> <p>4 flight stations. But there is no, like pulley -- there's</p> <p>5 nothing in the manual that I know of that says, like, you</p> <p>6 know, pulley 1, 2, 3 or 4.</p> <p>7 BY MR. JONES:</p> <p>8 Q Well, for discussion here today let's number them</p> <p>9 so we can be straight and have a clear record.</p> <p>10 We have the drum first.</p> <p>11 A Right.</p> <p>12 Q Then -- there's two diagrams for the first part?</p> <p>13 A Right, it's just a little clearer picture of it.</p> <p>14 Q The clearer one is detail F, and it shows the</p> <p>15 first three pulley sets --</p> <p>16 A Correct.</p> <p>17 Q -- after the drum.</p> <p>18 A Right.</p> <p>19 Q Let's call the first one 1 --</p> <p>20 A Yep.</p> <p>21 Q -- the second 2 --</p> <p>22 A 2.</p>
<p>1 of the put -- pulleys forward and aft of that position</p> <p>2 would be oriented the same way?</p> <p>3 A No. I mean I -- I knew they were at different</p> <p>4 angles. I mean I just used -- I used the letter T to</p> <p>5 denote the top cable at the very first position. And then</p> <p>6 at each subsequent pulley Dan would pull on one end and I</p> <p>7 would pull on the other end to verify that we were moving</p> <p>8 the same -- same pulley from the same location from where I</p> <p>9 had started and then put a letter T next to that pulley.</p> <p>10 So the T on this pulley lined up with the T on</p> <p>11 this pulley as far as the cable run where they were going</p> <p>12 from. --</p> <p>13 Q But --</p> <p>14 A -- pulley --</p> <p>15 Q -- if the --</p> <p>16 A -- to pulley.</p> <p>17 Q -- pulley stack had rotated, you'd be moving from</p> <p>18 a top-bottom distinction to a left-right distinction?</p> <p>19 A It's possible, yes. I mean it's --.</p> <p>20 Q Are the pulleys numbered?</p> <p>21 A No.</p> <p>22 I'll say for purpose of --.</p>	<p>1 Q -- the third --</p> <p>2 A 3.</p> <p>3 Q -- 3.</p> <p>4 And let's -- let's try and not talk over each</p> <p>5 other. We're -- we're getting worse on that.</p> <p>6 And then this longer diagram picks up from there.</p> <p>7 So 4 would be the one you described as being at a</p> <p>8 45-degree angle?</p> <p>9 A I believe it is.</p> <p>10 Q 5 is the one you first marked with the T?</p> <p>11 A I believe so.</p> <p>12 Q Now, did the T cable on the top part of that</p> <p>13 pulley set correlate with the right-hand or the left-hand</p> <p>14 turnbuckle?</p> <p>15 A I do not recall.</p> <p>16 Q Were you trying to keep that straight? The T</p> <p>17 meant one or the other?</p> <p>18 A The T meant one or the other. I mean my main</p> <p>19 concern at that point was to make sure the T -- that the</p> <p>20 cable -- because, like I said, I hadn't removed the -- the</p> <p>21 guide pins yet, the safety pins; so the cables were still</p> <p>22 in their respective pulleys.</p>

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<p>1 And I put a T on whatever -- like I said, the 2 first pulley, which happened to be on the top as you're 3 looking at it, I put a T. And then next cable, you know, 4 we physically followed to wherever it went through a 5 pulley -- whatever orientation it was in, the same cable 6 had a letter T put next to it so I could put that cable 7 back into that same pulley.</p> <p>8 Q So you were you doing this after Dan had already 9 disconnected the turnbuckles?</p> <p>10 A Yes, I believe so.</p> <p>11 Q And what you're doing at this point is Step C to 12 remove the retaining pins and fairleads. And while you're 13 doing that is when you're marking?</p> <p>14 A And I marked it before I pulled any of the pins. 15 The first thing I was mark -- I got a permanent marker, a 16 little, you know, Sharpie black marker and put a letter T 17 on all the pulleys.</p> <p>18 Q Did you and Dan discuss whether top or bottom or 19 left or right was the best way to -- to the mark things?</p> <p>20 A I don't think so. I think I -- I believe I told 21 him because, you know, I -- I marked with a letter T, and I 22 suppose -- and I -- I think -- I believe I told him that I</p>	<p>1 Q At what point does it become that? 2 A Where the cables split in the back here, there's 3 a -- and I don't remember which side of the cable it was on 4 but the -- excuse me. It's on the forward side of the 5 cables.</p> <p>6 There's an FDR bracket that was clamped to one of 7 the cables.</p> <p>8 Q What's that? 9 A Flight data recorder.</p> <p>10 And before we had -- and actually before the 11 cables were disconnected, we had marked with fingernail 12 polish on either -- on the cable itself on either side of 13 the brackets for the flight data recorder so we knew where 14 to put the bracket back on.</p> <p>15 And as I -- I don't recall right now exactly what 16 the bracket looks like. But it basically clamps to one and 17 lets the other cable slide through it.</p> <p>18 And when that cable -- because once you go past 19 this pulley right about here, these cables are --</p> <p>20 Q And let's get a frame of reference. That would 21 be cab- -- pulley set 6?</p> <p>22 A Pulley 6, yes.</p>
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<p>1 just used the letter T because that one was top. 2 I mean after I started marking them, you could 3 see that they were obviously not the top pulley if it was a 4 sideways pulley -- I mean, you know, if it was vertical or 5 something but --.</p> <p>6 Q Did you write down on your notes or on your copy 7 of the REPS paper which cable, the left- or right-hand 8 thread top corresponded to?</p> <p>9 A No.</p> <p>10 Q You just kept that straight in your head?</p> <p>11 A At that -- at that time because I said -- you 12 know, at this particular step that we were doing, I 13 wasn't -- I wasn't looking at which cable was attached to a 14 left- or right-hand thread at the other end. I hadn't even 15 gotten to that point. I would just mark whatever cables in 16 that run, that position, you know, back to the -- just 17 after the rear spar split is.</p> <p>18 Q So your purpose in marking these top or bottom 19 was not to keep track of --</p> <p>20 A Well, I --</p> <p>21 Q -- which cable --</p> <p>22 A It is -- it is eventually. I mean --</p>	<p>1 Q Okay. 2 A Like, once you go past pulley 6, you know, the 3 cables are very obvious straight-run through the aircraft 4 towards the tail. You know, they don't change, you know, 5 direction or any -- they don't rotate left or right or 6 anything.</p> <p>7 And where we -- because when we marked the one 8 cable with fingernail polish, which is what the FDR 9 attached to -- and I don't remember if it's a left- or 10 right-hand thread side of the cable. That denoted to us 11 that that cable had to lay on -- and I believe it was 12 towards the outer of the fuselage.</p> <p>13 That cable would have to line up with -- with 14 that side. I mean when you -- when you would lay the cable 15 back in, it would have to be right there. In other words, 16 the red marks would have to line up to match the other half 17 of the cable for the flight data recorder to hook up again.</p> <p>18 Q So your marking on the cable at the FDR point was 19 to assist you in determining whether that run of the cable 20 was right- or left-hand thread?</p> <p>21 A It was -- it's a combination of as to where the 22 cable was positioned and also where to put the FDR back on</p>

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<p>1 because the FDR bracket only fits on one way where you 2 can't -- if you -- because if you switch the cables, the 3 FDR bracket won't go on the other direction because the way 4 that it fits on the cable.</p> <p>5 Q Had you ever prior to this time in August of 2003 6 replaced a run of cable using this procedure you just 7 described?</p> <p>8 A Probably similar, I mean, in the past. I mean 9 it's -- it's -- it's common to mark what cables and what 10 pulley, you know, before you pull the pins out.</p> <p>11 Q In addition to using lead lines or in lieu of 12 using lead lines?</p> <p>13 A Probably in lieu of using lead lines.</p> <p>14 Q And you had done this before?</p> <p>15 A To mark cables -- I mean to mark pulleys?</p> <p>16 Q In lieu of using --</p> <p>17 A Yes.</p> <p>18 Q -- lead lines?</p> <p>19 A Yes.</p> <p>20 Q Had you done that on your own initiative, or had 21 you been taught to do that?</p> <p>22 A I don't recall. It's -- it was probably</p>	<p>1 Q So are you saying that the use of the lead lines 2 would not have assisted you in getting the FDR back where 3 it belonged?</p> <p>4 A No, it would not have.</p> <p>5 Q Now, when you started with cable set -- or pulley 6 set 5 --</p> <p>7 A Right.</p> <p>8 Q -- and marked it T, which direction did you work 9 from there, fore or aft?</p> <p>10 A I believe I did the aft section first just 11 because it's easier.</p> <p>12 Q And there's only one set there; right?</p> <p>13 A Yeah -- I'm trying to remember. There's one -- I 14 don't believe this picture's correct. I believe there's 15 actually -- without looking at the aircraft, I couldn't say 16 for certain. But I believe there's another set of pulleys 17 somewhere in this run here. I think there is, but I don't 18 know for certain.</p> <p>19 Q Well, let's be clear for the record. We've got 20 between the drum and the turnbuckle one, two, three, four, 21 five, six pulley sets on this diagram --</p> <p>22 A On that diagram --</p>
<p>1 something I was shown over the years.</p> <p>2 Q But you don't remember someone --</p> <p>3 A I don't remember anyone specifically.</p> <p>4 Q But to be clear, this procedure you're describing 5 is a departure from the procedure called out for in the 6 REPS manual; correct?</p> <p>7 A Yeah, only as far as not attaching the lead 8 lines.</p> <p>9 Q Well, there's nothing about marking pulleys T or 10 not T or putting nail polish on the clamp at the FDR called 11 for in the REPS manual, is it?</p> <p>12 A No, it doesn't call out for it; but it needs to 13 be done because if you don't, you have no reference for 14 putting the FDR back on other or as to where the cables 15 were originally sitting, which was my concern because where 16 the pedestal was already taken apart, I wanted to the best 17 of my ability to get the cables back to the position that 18 they were in.</p> <p>19 Q So were you handicapped a bit in the fact that 20 the pedestal was already apart and the drum already off?</p> <p>21 A I would have preferred to have taken it apart 22 myself.</p>	<p>1 Q -- right?</p> <p>2 A -- yes.</p> <p>3 Q You're thinking there might be another set?</p> <p>4 A I think there might be one more set but I'm not 5 certain because I can't see the rear of this -- the spar of 6 the aircraft isn't depicted on this diagram here.</p> <p>7 Q This little bracket right here between the sixth 8 pulley set and the turnbuckle, what's that?</p> <p>9 A I believe that's a fairlead.</p> <p>10 Q Now, is that something you would have removed?</p> <p>11 A Yes, I believe -- I don't recall if we had to or 12 not because -- I mean generally speaking the fairleads in 13 the Beechcraft, it's like a phenolic block where, like, two 14 U shapes come into with the cable to, like, you know, 15 chatter against.</p> <p>16 If there was enough room to pass the turnbuckle 17 through when we removed it, we wouldn't have had needed to 18 remove it. I just don't recall if we had to or not. I 19 know there was -- there were several of them. I know we 20 had to remove, you know, one or two of them; but I don't 21 know -- that one in particular I don't remember.</p> <p>22 Q So for Item C of this list where it says remove</p>

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<p>1 sprocket stays in place on its own on the side of the 2 pedestal or if it's actually -- I mean I know the shaft 3 is -- or if it's key common -- I just don't recall how it 4 fits together right there without looking at it a little 5 bit further.</p> <p>6 Q When you say IPC, you mean illustrated -- 7 A Illustrated parts catalog. It has a little bit 8 more detailed picture than what this does here.</p> <p>9 Q The sprocket itself mates to this key side of the 10 drum?</p> <p>11 A It's -- it's either to that side, or it mates to 12 the shaft itself. I just don't recall. I know it mates to 13 what -- in some fashion with the shaft right there.</p> <p>14 Q But this key side has to face the sprocket?</p> <p>15 A I believe so.</p> <p>16 Q All right. We're onto Item M, "Withdraw the 17 cable from the airplane drawing the lead lines through the 18 pedestal."</p> <p>19 So if you're using lead lines, you pull the whole 20 cable out --</p> <p>21 A Right.</p> <p>22 Q -- and it pulls lines all the way through the</p>	<p>1 A No.</p> <p>2 Q Now we'll move on to the installation part?</p> <p>3 A All right.</p> <p>4 Q You've got it out and you're going to put a new 5 one in. What did you do?</p> <p>6 A Well, we had the -- once we had the old air -- 7 cable out of the aircraft, we stretched it out along the 8 hangar floor because it was really long cable. And we laid 9 the cables side by side and -- to make sure that, you know, 10 left was left and right was right; so they were -- when 11 they were laying on the floor, they had the same ends, you 12 know, matching each other.</p> <p>13 And because the cables in the plane were -- had 14 been kinked where it came off the pulley --</p> <p>15 Q Help us by showing us where --</p> <p>16 A Like I said --</p> <p>17 Q -- that would happen here. If you can take -- if 18 you want to take that string off there --</p> <p>19 A Like I said, I don't know exactly how they did it 20 because I didn't see it when they took it apart. But in 21 some fashion this cable had come off and it -- against the 22 cover here and it kinked itself.</p>
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<p>1 pulley --</p> <p>2 A Right.</p> <p>3 Q -- up and out of the pedestal?</p> <p>4 A Right.</p> <p>5 Q So since you weren't using lead lines, you just 6 pulled the cable out; and there was nothing along the run?</p> <p>7 A Correct.</p> <p>8 Q Now, Item N relates to the aft cable; right?</p> <p>9 A Yes, I believe so.</p> <p>10 Q Does O relate to the aft or forward cable?</p> <p>11 A This is all for the aft.</p> <p>12 Q O does?</p> <p>13 A Yes.</p> <p>14 Q What about P?</p> <p>15 A Yeah, this -- this is all for the aft of the 16 aircraft.</p> <p>17 Q Okay. So all these steps -- P, Q, and R. -- 18 which finish the removal part of this --</p> <p>19 A Right.</p> <p>20 Q -- task are all aft the issues?</p> <p>21 A Yes, they are.</p> <p>22 Q So you didn't deal with those?</p>	<p>1 And when -- you had this whole cable removed 2 laying on the ground. The cable would -- it was pulled up 3 into a knot. It wouldn't just lay flat because there was, 4 like, bends in the wire. This wire is not meant to be 5 bent, you know. I mean it can take curves; but if you bend 6 it, it puts a permanent setup that it's not supposed to 7 have.</p> <p>8 So, like I said, when we had the cable out, we 9 had to physically pull the old cable taut. You know, if 10 you stood -- I think, you know, one of us stood on one end, 11 one stood on the other end to pull it tight, to get the 12 slack out of it so we could -- to make sure we were -- 13 because where the marks we had put on -- because if we 14 removed the cable from the --.</p> <p>15 No, let's see. If the cable's already out of the 16 drum. And we used the -- when you put this cable into 17 here -- if you look at this one, you can see the -- the 18 very first thing you do is -- it has a hard, like, Z 19 pattern.</p> <p>20 Q Go ahead and unwrap it so we can see that. And 21 I'm not expecting we're necessarily going to be able to see 22 it on the video; but if it helps you explain, that's good.</p>

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<p>1 Q -- you know where to start?</p> <p>2 And that's essentially so you end up with the</p> <p>3 right lengths at the back?</p> <p>4 A Exactly right because you need to have even</p> <p>5 cables at the turnbuckles.</p> <p>6 Q So then you need to orient it so that you --</p> <p>7 you're sure that the right-hand thread is coming off the</p> <p>8 corrected side, front or back --</p> <p>9 A Right.</p> <p>10 Q -- right?</p> <p>11 So you need to wrap it in such a way that the</p> <p>12 correct end is coming off -- let me get this in the right</p> <p>13 order.</p> <p>14 This one, for example, has a red mark in the</p> <p>15 center.</p> <p>16 You start like that --</p> <p>17 A Correct.</p> <p>18 Q -- with your finger on it, and you turn?</p> <p>19 A Right, turn 90 degrees.</p> <p>20 Q Before you turn, you have to figure out which end</p> <p>21 is coming off of the front or back?</p> <p>22 A As far as -- yeah -- I mean there's a diagram in</p>	<p>1 Q But looking at the words, if this is forward,</p> <p>2 this means the left-hand thread comes off the forward side</p> <p>3 of drum; is that right?</p> <p>4 A Right.</p> <p>5 Q So if -- if this goes in the plane with the keyed</p> <p>6 side to the left, the left-hand side has to come off the</p> <p>7 front.</p> <p>8 Do you start wrapping that way?</p> <p>9 A It's -- I'd have to hold -- we wrapped it as per</p> <p>10 the picture here, you know.</p> <p>11 Q Trying to focus on getting the left-hand to come</p> <p>12 off the front; right?</p> <p>13 A I believe how they show the diagram, it says</p> <p>14 left-hand threads holding the pulley like this, wrap --</p> <p>15 would wrap around towards this direction.</p> <p>16 Q But if this is front, left-hand has to come off</p> <p>17 the front; is that right?</p> <p>18 A Yeah -- well, the picture is -- but the problem</p> <p>19 is the picture of this pulley is reversed.</p> <p>20 Q Did you use this diagram?</p> <p>21 A Yes, we did.</p> <p>22 Q Did you read the whole thing?</p>

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<p>1 shaft and the sprocket and whatnot, what did you do next?</p> <p>2 A Once that was -- that was tightened down in</p> <p>3 place, I went under the pedestal, I went under the nose of</p> <p>4 the aircraft and started this pulley right here and, you</p> <p>5 know, following the diagram, you know, made sure the --</p> <p>6 made sure that the pulley run was matching how this diagram</p> <p>7 goes.</p> <p>8 And I laid -- I'd go to each set of pulleys, and</p> <p>9 I'd lay each cable into it matching this picture and then</p> <p>10 put the safety pin back in, the cable retaining pin.</p> <p>11 Q So starting with the first set of pulleys --</p> <p>12 A Like I said --</p> <p>13 Q -- you're not --</p> <p>14 THE COURT REPORTER: Wait --</p> <p>15 MR. JONES: I'm sorry.</p> <p>16 Let's not talk over each other.</p> <p>17 BY MR. JONES:</p> <p>18 Q -- you're not using your T system to determine</p> <p>19 which one goes in which pulley; you're using this diagram?</p> <p>20 A Using this diagram, yes.</p> <p>21 Q So what's the -- what's the use of having had a T</p> <p>22 on this pulley if you're not using it for that purpose?</p>	<p>1 I believe it was one, two, three, four, five -- according</p> <p>2 to this diagram, I believe it was the sixth pulley had to</p> <p>3 be removed because it's -- the cable won't physically pass</p> <p>4 through -- the crimped-on end of it does not fit underneath</p> <p>5 the pulley. You have to unbolt it and take the stack of</p> <p>6 pulley out, run the cables under it, and then put it back</p> <p>7 in.</p> <p>8 You know, we had removed it earlier. And I think</p> <p>9 we had loosely kind of set it back in place because we knew</p> <p>10 we were going to have to remove it again to run the new the</p> <p>11 cable underneath it.</p> <p>12 Q So for that pulley set that had to be</p> <p>13 disassembled, was the T on the pulley itself?</p> <p>14 A No, not on the -- it was on the brack- -- the</p> <p>15 aluminum bracket that holds the pulleys.</p> <p>16 Q And the bracket didn't come out?</p> <p>17 A No, the bracket never came out.</p> <p>18 Q All right. Coming back to our list of what</p> <p>19 you're doing, page 4 of Exhibit 6 again, you've already</p> <p>20 wrapped it --</p> <p>21 A Yeah.</p> <p>22 Q -- which was B.</p>
Page 155	Page 157
<p>1 A Well, when you get further back, it matches</p> <p>2 the -- like, the F -- because it -- I just -- I don't</p> <p>3 recall. It has to be -- it was either the FDR cable that</p> <p>4 had the marks on it or the one that didn't -- or the other</p> <p>5 one that didn't have any marks on it was the one the</p> <p>6 corresponded to letter of C. And I don't recall which was</p> <p>7 which.</p> <p>8 Q So that helps you back here from --</p> <p>9 A Right. It helps back in this area here.</p> <p>10 Q It doesn't help up here in the first few pulleys?</p> <p>11 A Right --</p> <p>12 Q And to do that --</p> <p>13 A -- because --</p> <p>14 Q -- you're just --</p> <p>15 A Following --</p> <p>16 Q -- following this diagram?</p> <p>17 A -- following the diagram.</p> <p>18 So I laid the pull- -- the cable back over the</p> <p>19 pulleys, you know, per the diagram, detail F here; put the</p> <p>20 safety pin in at each location. And then we worked our way</p> <p>21 back, I think, to the where the turnbuckles were.</p> <p>22 At that point -- and one of these pulleys -- and</p>	<p>1 C, "Set the tab indicator at zero. Refer to</p> <p>2 figure 202." What's that?</p> <p>3 A That was -- on the control -- on the -- the</p> <p>4 elevator control wheel that you really can't see it from --</p> <p>5 Q Is that this?</p> <p>6 A That's this here. It's a big plastic wheel. You</p> <p>7 really -- this picture you can -- you cannot see what</p> <p>8 they're talking about it. But there's a -- a scale printed</p> <p>9 on the -- the side of this drum here that has, you know,</p> <p>10 zeros through whatever. It was a degree range marked on</p> <p>11 it.</p> <p>12 Q And what's the purpose for putting that back to</p> <p>13 zero?</p> <p>14 A So when you rig the whole system, the tab on the</p> <p>15 elevator is at zero.</p> <p>16 Q So you're planning for doing a rigging all along?</p> <p>17 Of course, you have to.</p> <p>18 A You have to, yeah. I mean it's obvious that it</p> <p>19 has to be -- the rigging is going to have to be done.</p> <p>20 Q And operational check too?</p> <p>21 A You -- I mean normally, yes.</p> <p>22 Q And this part of that process is to get all set</p>

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<p>1 up so that the checks will be right?</p> <p>2 A Right. This is just initial setup to -- so when</p> <p>3 you -- because it's -- because it's -- this is -- basically</p> <p>4 all this setup is for is when you do the tensions,</p> <p>5 everything is still at zero, you know, so it's lined up so</p> <p>6 you can do your actually, you know, functional check at the</p> <p>7 end.</p> <p>8 Q So to perform Step C, are you just turning the</p> <p>9 wheel or do you have to disassemble the wheel at all?</p> <p>10 A I -- we did not have to move it at all. It was</p> <p>11 already set at zero. I never moved the trim wheel.</p> <p>12 I mean because the trim wheel -- you know, like I</p> <p>13 said, when I came in, the cable was already off. And this</p> <p>14 scale here -- this wheel was at attached because this --</p> <p>15 the large outside wheel is geared to the inside one where</p> <p>16 the scale is.</p> <p>17 This was on the aircraft already; it was not</p> <p>18 removed. And the Indicator was reading zero. It was,</p> <p>19 like, a little white arrow pointing at zero when I -- so I</p> <p>20 didn't have to put it at zero when I assembled it; it was</p> <p>21 already there.</p> <p>22 Q So C was already taken care of?</p>	<p>1 A I don't know if that was done right then.</p> <p>2 Q You believe it was done eventually?</p> <p>3 A Yes.</p> <p>4 Q Is it in order in this list for a particular</p> <p>5 reason?</p> <p>6 A I'm sure they do -- they have them -- I'm sure</p> <p>7 it's in the list just for -- to make sure it's done, you</p> <p>8 know, because once you put the side panels back on the</p> <p>9 pedestal, you don't see it. You know, it's just to make</p> <p>10 sure it's safetied.</p> <p>11 Q Do you as a mechanic typically have discretion to</p> <p>12 change order of -- of items in a task list like this?</p> <p>13 A For something like that, yes --</p> <p>14 Q It's a --</p> <p>15 A -- either --</p> <p>16 Q -- matter of -- of judgment as to whether it's</p> <p>17 important in order or not?</p> <p>18 A Yeah. I mean because it's -- it's a matter of --</p> <p>19 especially with a cable system rigging, if we had to take</p> <p>20 something back apart, which was quite likely, I mean,</p> <p>21 because so much had been worked on -- I mean it's -- it's</p> <p>22 like turnbuckles. I mean you don't safety the turnbuckles</p>
Page 159	Page 161
<p>1 A Yeah, it was already at that point so --.</p> <p>2 Q D is "Assemble the cable guard over the drum.</p> <p>3 Install the sprocket on the shaft. Carefully position the</p> <p>4 staff assembly in the pedestal, installing the lower end of</p> <p>5 the chain over the sprocket."</p> <p>6 A Right.</p> <p>7 Q And that's what you described a minutes ago in</p> <p>8 terms --</p> <p>9 A Right.</p> <p>10 Q -- of --</p> <p>11 A Right.</p> <p>12 Q -- putting everything back in?</p> <p>13 E, "Install and safety-wire the bolts."</p> <p>14 Did you do that?</p> <p>15 A We put the bolts in. And I don't know if we</p> <p>16 safetied them right at that point because typically you</p> <p>17 usually you do a safety at the very end of a job after the</p> <p>18 inspector's looked at it because if there's something wrong</p> <p>19 and we had to take it out, it's kind of counterproductive</p> <p>20 to safety everything up when it could be wrong, you know,</p> <p>21 so --.</p> <p>22 Q So you don't know if you did that then?</p>	<p>1 until after you tensioned them. I mean it's the same type</p> <p>2 of a thing.</p> <p>3 Q What's the next step, Item F, about?</p> <p>4 A The little chain that wraps around -- it goes up</p> <p>5 from the main wheel down through a little -- it's, like, a</p> <p>6 little idler gear that it runs through. It wraps around</p> <p>7 the sprocket down bottom.</p> <p>8 And basically you just -- the idler -- idler</p> <p>9 sprockets on an arm that pivots; and it has a bolt, like,</p> <p>10 in the center that tightens it. So you loosen the bolt,</p> <p>11 you put tension on it, and you tighten the bolts. And that</p> <p>12 keeps the proper tension on that chain, keep it in place.</p> <p>13 Q And did you do that in this order?</p> <p>14 A I believe so. That was done.</p> <p>15 Q The next item is G, "After identifying the cable</p> <p>16 ends". Does that mean left-hand, right-hand?</p> <p>17 A Yeah, you just -- I mean you look at them, and</p> <p>18 it's -- you can physically -- they -- they're stamped left</p> <p>19 and right.</p> <p>20 Q "Attach the proper leads lines to the cable."</p> <p>21 And those would have been would the lead lines</p> <p>22 that came up through had you used them?</p>

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment.*

EXHIBIT 8

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

December 29, 2003

Group Chairman's Factual Report

NYC03MA183

A. Accident

Operator: Colgan Air, Inc.
Location: Yarmouth, Massachusetts
Date: August 26, 2003
Time: 1540 Eastern Daylight Time (EDT)
Airplane: Beech 1900D, N240CJ

B. Operational factors Group

Stephen M. Demko
Senior Air Safety Investigator (NER-A)
National Transportation Safety Board
Parsippany, NJ

Louis I. Johansen
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RAC 000276

Boston, Massachusetts

Jeb Barrett
Director of Flight Standards
Colgan Air, Inc.
Manassas, Virginia

C. Summary

On August 26, 2003, at 1540 eastern daylight time, a Beech 1900D, N240CJ, operated by Colgan Air Inc. as flight 9446 (d.b.a. US Airways Express), was substantially damaged when it impacted water near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts; destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan was filed for the positioning flight conducted under 14 CFR Part 91.

D. History of Flight

According to a representative of Colgan Air Inc., after scheduled maintenance, the flightcrew was dispatched to fly the accident airplane on a positioning flight. The flightcrew was aware that maintenance was performed on the airplane; however, it was unknown if the flightcrew was aware of the type of maintenance.

According to data from Federal Aviation Administration (FAA) air traffic control (ATC), the flight departed runway 24 at Hyannis about 1538. Shortly after takeoff, the flightcrew declared an emergency and reported a "runaway trim." The airplane initiated a left turn and reached an altitude of approximately 1,100 feet. The flightcrew subsequently requested to land on runway 33, and ATC cleared the flight to land on any runway. No further transmissions were received from the flightcrew.

Witnesses observed the airplane in a left turn, with a nose-up attitude. The airplane then pitched nose-down, and impacted the water at an approximate 30-degree angle.

According to data from the flight data recorder (FDR), the airplane began the flight at a pitch trim control position of approximately 2 degrees negative (nose down). Shortly after takeoff, the pitch trim control moved to approximately 3 degrees negative, where it remained for a period of about 10 seconds. The pitch trim control then moved to an approximate 7 degree negative position, where it remained for the duration of the flight. The data also revealed that after takeoff, the airspeed continued to increase to approximately 250 knots.

RAC 000277

The accident flight was the first flight after maintenance had been performed on the airplane; which included replacement of both elevator trim actuators and the forward elevator trim cable.

Excerpts of the cockpit voice recorder (CVR) transcript revealed the following:

At 1523:30, the captain called for the Before Start checklist.

At 1523:43, the first officer stated, "preflight's complete. cockpit scan complete." The captain replied, "complete."

At 1523:58, the first officer stated, "maintenance log, release, checked the aircraft." The captain replied, "uhhhh. maintenance and release on aircraft. The captain subsequently identified that the FDR was inoperative, and confirmed that the MEL was still open.

At 1525:11, the captain began to start the right engine, before being interrupted by an individual outside the airplane. Approximately 1 minute later, after a conversation with maintenance personnel, the captain resumed the starting of the right engine.

At 1529:29, as the captain was starting the left engine, the flightcrew began non-pertinent conversation, which lasted about 30 seconds.

At 1530:04, the captain called for the after start checklist. After completing the after start checklist items, the first officer announced the checklist "complete" 15 seconds later.

At 1530:21, the captain continued the previous non-pertinent conversation, followed 10 seconds later with, "all right we're ready to taxi with HOTEL."

At 1530:50, the flightcrew began a conversation about the flightplan to ALB, taxiing the airplane, and which pilot would fly the airplane. The conversation lasted for about 4 minutes.

At 1534:48, the captain stated, "all right, run the checklist." The items that followed were similar to the items that were required to be completed on the Taxi Checklist.

At 1535:14, the first officer stated, "flaps are zero indicating zero, three trims are set." The captain replied, "roger."

At 1535:18, the first officer called the taxi checklist "complete."

At 1535:26, the flight crew began a non-pertinent discussion about a landing airplane. The discussion lasted about 1 minute and 27 seconds.

At 1537:17, the captain stated, "all right. forty six is ready."

The flightcrew then began to announce several item which were identified as being on the Before Takeoff checklist; however, the checklist was not called for.

At 1537:48, the first officer radioed the HYA tower controller and announced that the flight was ready to depart. The flight was subsequently cleared for takeoff.

At 1538:40, the first officer stated, "V1... rotate." About 6 seconds later, the captain stated, "we got a hot trim, Steve... roll back Steve roll back roll back roll back roll back."

At 1538:53, the captain stated, "I got it... (pull) back... she's heavy buddy... roll it back roll my trim Steve."

At 1539:00, the captain stated, "do the electric trim disconnect... hold... all right, Steve... hold back Steve"

At 1539:04, the captain stated, "no go on the controls with me Steve." The first officer replied, "I got it."

At 1539:14, the captain requested that the landing gear be raised, followed by the CVR recording sounds similar to landing gear motor noises.

At 1539:18, the captain requested that the flaps be raised, which the first officer conformed that they were "up."

At 1539:21, the captain radioed the HYA tower controller, requesting an emergency return to the airport, which the tower controller approved.

At 1539:33, the first officer queried the captain, "you want the power back?" The captain replied, "pull the power back. pull the power back."

At 1539:36, the first officer stated, "slowly," followed by the CVR recording sounds similar to a decrease in engine/propeller speed.

At 1539:40, the captain stated, "all right, were gonna need both of us on this Steve."

At 1539:48, the first officer stated, "(could) I pull the breaker?"

At 1539:49, the CVR recorded a sound similar to an altitude alerter.

At 1539:49, the captain stated, "pull the breaker Steve... pull the breaker... I got it if you've got the trim baby."

At 1539:54, the first officer stated, "where is it?" The captain replied, "find it... look left of the silver thing, Steve. look left of the silver thing."

At 1540:02, the first officer stated, "left of the silver thing?" The captain replied, "left of the silver thing Steve... don't let go of the st- control Steve, just stay with me... you pull back for all your worth, baby... just keep (pulling/holding) back for all your worth.... Steve (pull/hold) back."

At 1540:39, the CVR recorded, "terrain terrain. * pull up."

At 1540:47, the CVR recorded, "woop woop pull up pull."

The recording ended at 1540:47

E. Flight Crew Information

Summary

The captain was a company line pilot and he was certificated, current and qualified in the Beech 1900D in accordance with Colgan Air Inc., and FAA requirements. The first officer was current and qualified for his position in the Beech 1900D in accordance with Colgan Air Inc., and FAA requirements. A review of FAA accident/incident and enforcement records of both flight crewmembers indicated that there was no history of certificate actions filed against either pilot.

On the day of the accident, both crewmembers had completed their assigned flight schedule, and were proceeding to their domiciles, when Colgan Air operations personnel called them back to the airport to fly the airplane to Albany.

Details

Captain:

Date of hire with Colgan Air, Inc.: July 16, 2001

Airman Certificates / Ratings and Limitations:

Airline Transport Pilot (issued 01/08/03)

Airplane Multiengine Land

BE-1900

Commercial Privileges

Airplane Single Engine Land and Sea

BE-1900 Second-in-Command Required

Mechanic (issued 01/28/97)

RAC 000280

Airframe and Powerplant

Medical Certificate:

First Class (issued 03/18/03)

Limitations: Holder Must Wear Corrective Lenses

A review of FAA records indicated that on April 24, 2000, the captain was issued a notice of disapproval of application for a commercial multi-engine rating. He subsequently passed the test and was issued a temporary airman certificate on April 25, 2000.

A review of FAA records indicated that on January 6, 2003, the captain was issued a notice of disapproval of application for an airline transport rating, and BE-1900 type rating. The notice of disapproval stated that upon reapplication, the applicant was to be reexamined on non-precision approaches, and normal and abnormal procedures. The captain subsequently passed the test and was issued a temporary airman certificate on January 8, 2003.

A review of FAA records indicated that the captain had no record of airplane accident, incident, or enforcement actions.

According to Colgan Air Inc. employment and flight records, the captain had accumulated/completed the following flight times and training prior to the accident:

Total flight time:	2,891 hours
Total time with company:	1,364 hours
Total pilot-in-command (PIC) time:	1,836 hours
Total PIC with Company:	451 hours
Total BE-1900 PIC flight time:	1,179 hours
Total BE-1900 flying time last 90 days:	211 hours
Total BE-1900 flying time last 30 days:	76 hours
Total BE-1900 flying time last 24-hour period:	7.3 hours

Total duty time (day of accident): 10.6 hours

Most recent recurrent ground training prior to the accident: 1/24/03

Most recent proficiency check prior to the accident: 6/05/03

First Officer:

Date of hire with Colgan Air, Inc.: October 4, 2002

Airman Certificate / Ratings and Limitations:

RAC 000281

Commercial Pilot (issued 10/18/00)
 Airplane Single and Multiengine Land
 Instrument Airplane

Flight Instructor
 Airplane Single Engine Land
 Instrument Airplane

Medical Certificate:

First Class (issued 08/22/03)

Limitations: Must Wear Corrective Lenses for Near and Distant Vision.

A review of FAA records indicated that on July 10, 1998, the first officer was issued a notice of disapproval of application for a commercial pilot rating. The first officer failed the test again on July 13, 1998, and was issued a notice of disapproval of application. He subsequently passed the test on the third attempt, and was issued a temporary airman certificate on July 13, 1998.

A review of FAA records indicated that the first officer had no record of airplane accident, incident, or enforcement actions.

According to Colgan Air Inc. employment and flight records, the first officer had accumulated/completed the following flight times and training prior to the accident:

Total flight time:	2,489 hours
Total flight time with company:	689 hours
Total pilot-in-command (PIC) flight time:	1,667 hours
Total PIC with Company:	0 hours
Total BE-1900 second-in-command (SIC) flight time:	689 hours
Total BE-1900 flying time last 90 days:	222 hours
Total BE-1900 flying time last 30 days:	52 hours
Total BE-1900 flying time last 24-hour period:	8.7 hours
Total duty time (day of accident): 10.7 hours	

Most recent recurrent ground training prior to the accident: 1/24/03

Most recent proficiency check prior to the accident: 11/03/02

F. Training

RAC 000282

The following references were extracted from the FAA Approved Colgan Air Crew Member and Dispatcher Training Program VOL IV, which identified the training Colgan Air Beech pilots received specific to elevator trim malfunctions.

Paragraph 4.4.0 Advanced Simulation Training Syllabus Initial New-Hire, Transition and Upgrade from SIC to PIC Pilot Simulator Training-Appendix H: Beech 1900 Series- Abnormal and Emergency Procedures, Lesson 4, Appendix 4-15 Revision 17 Dated 01 November 02 item 6 "Emergency Procedures" specified training for trim failure.

Paragraph 4.4.0 Advanced Simulation Training Syllabus Initial New-Hire, Transition and Upgrade from SIC to PIC Pilot Simulator Training-Appendix H: Beech 1900 Series- Abnormal and Emergency Procedures, Lesson 7, Appendix 4-22 Revision 17 Dated 01 November 02 item 3, "Emergency Procedures" -Flight Controls sub item Trim Run Away.

Paragraph 4A.1.3, Initial New Hire, Upgrade, Transition, Recurrent and Re-qualification Aircraft Ground Training 121.419 and 121.427 4A-A/C Ground-10 Revision 5 Dated 30 August 98 item I, Flight Controls included "Unscheduled Electric Elevator Trim" as Flight Control elements to be trained.

The preceding Beech 1900 training elements provided for class room training discussions and practical simulator training on dealing with a runaway trim condition.

G. Airplane Information - Weight and Balance

The following weight and balance scenarios were developed to determine the gross weight of the airplane, and its operating envelope at that weight. Scenario number 1 was determined using information provided by Colgan Air Inc., and using FAA standard weights. Scenario number 2 was determined by using information provided by Colgan Air Inc., and using the known weights of the pilots.

Scenario 1

Basic Empty Weight (BEW)	10,370.0
FDR Upgrade	6.7
New BEW	10,376.7
2 Crew Flight Crewmembers @ 180#	360.0
Crewmember Flight Gear	20.0
Basic Operating Weight (BOW)	10,756.7
Fuel	3,271.0
Ramp Weight	14,027.7
Fuel Burn During Taxi	(-75.0)
Takeoff Weight	13,952.7

Scenario 2

Basic Empty Weight (BEW)	10,370.0
FDR Upgrade	6.7
New BEW	10,376.7
2 Crew Flight Crewmembers	454.0
Crewmember Flight Gear	20.0
Basic Operating Weight (BOW)	10,850.7
Fuel	3,271.0
Ramp Weight	14,121.7
Fuel Burn During Taxi	(-75.0)
Takeoff Weight	14,046.7

Both weight and balance scenario results revealed that the airplane was within the operating envelope for the flight.

H. Standard Operating Procedures (SOPs)

Sterile Cockpit Concept

Review of the Colgan Air, Inc, Flight Operations Policy and Procedures Manual (FOPP), revealed that during the periods of taxiing, takeoff, and altitudes below 10,000 feet indicated, the "flight crewmembers will not participate in any activity which could distract any flight crewmember from the performance of their duties or which could interfere in any way with the proper conduct of those duties." Examples given by the manual, of activities that were to be avoided, included "engaging in non-essential conversations."

Aircraft Maintenance and Flight Log

The FOPP also detailed the pilot's responsibilities for determining the airplanes airworthiness. It stated;

- A. The aircraft must be airworthy in all respects as specified in the type certificate. All instruments and equipment required for the safe operation of the aircraft must be operable. Prior to any flight, the Pilot-in-Command will complete the following:
 - 1. Ensure the Airworthiness Certificate, Registration Certificate, Aircraft Maintenance & Flight Log, and a MEL Control Log are onboard. Ensure the above items are for the assigned aircraft. Ensure an additional Aircraft Maintenance & Flight Log and a MEL Control Log is onboard to record discrepancies found during the flight day. Ensure MEL "inoperative" stickers are in the maintenance can.

2. Review/Verify the Aircraft Maintenance & Flight Log back to the latest valid Airworthiness Release and ensure that all discrepancies between that Airworthiness Release and the current log page are corrected or properly deferred. If the Captain determines that the aircraft status is other than listed on the release, the Captain will inform System Control and correct the inconsistency.
3. Review the previous flights for Captain's signature. If the previous Captain's signature is missing, attempt to locate the Captain. If unable to locate the previous Captain, the new Captain will verify that there are no open discrepancies, and notify System Control. System Control will attempt to locate the previous Captain and verify no open discrepancies.

Review the MEL Control Log for items that have been deferred in accordance with the approved MEL procedures. Compare open MEL's listed on the MEL Control Log with the Dispatch Release. If any differences are found the PIC must contact System Control to correct the differences.

Perform the preflight inspection of the aircraft. If any discrepancies are noted they must be documented in the Aircraft Maintenance & Flight Log and System Control notified.

Airworthiness Release is valid as follows:

- a. Beech 1900 - four (4) flight days and may be extended on a daily basis, if authorized by maintenance control. Enter the extension in the aircraft maintenance logbook.
- b. Saab 340 - three (3) calendar days and may be extended on a daily basis, if authorized maintenance control. Enter the extension in the aircraft maintenance logbook.

No aircraft may be operated with inoperable equipment or instruments unless the operation is in accordance with an approved Minimum Equipment List (*MEL*) for the aircraft type and/or Colgan Air's DMI procedures.

Review of the Aircraft Maintenance and Flight Log for the accident flight revealed a discrepancy, which stated, "Flt. Data Recorder needs downloading due to mx. Replacement of Elevator trim cable (Fwd. Most)." The discrepancy was entered and signed by a mechanic. The discrepancy was released and signed by the same mechanic, in accordance with an approved Minimum Equipment List, and supporting control number.

Checklists

Review of Colgan Air's Beech 1900 Company Flight Manual revealed that it was FAA approved and contained the expanded normal checklist procedures, as well as abnormal and emergency procedures, policies and procedures; all of which applied to Colgan Air flight operations.

The manual had specific guidance on the use of normal checklists and procedures, and was to be used to "ensure all safety items are accomplished." All of the checklists were to be accomplished using a challenge and response method (except for the climb and after landing checklists). The manual also gave guidance in the event that the checklist flow was interrupted. It stated;

"Interruptions to checklists increase the possibility of items being missed, which in turn may create hazards to flight operations. When interruptions occur, the crew must give consideration to restarting the checklist from the beginning, taking into consideration such factors as the length and type of interruption."

The following checklist excerpts, which were included in Colgan Air's Beech 1900 Company Flight Manual, were to have been accomplished by the accident flightcrew. The details of the checklists are focused on the elevator trim system and its related components and systems.

Preflight Inspection (Pilot Walk Around)

"A preflight inspection will be accomplished prior to every flight. A comprehensive 'Preflight Inspection - Detailed' must be accomplished on the aircraft's first flight of the day, after significant maintenance has been performed or anytime the aircraft's condition is in question."

"The Detailed Preflight Inspection will normally be accomplished by the first officer, although either or both crewmembers may complete the inspection."

The Detailed Preflight Inspection of the empennage and tail section of the airplane required that the "[Trim] Tabs are in Neutral Position."

Cockpit Scan & Origination Safety Crew Check

The Cockpit Scan provided an organized sequence for moving through the various panels within the cockpit, to ensure proper configuration of the aircraft prior to engine start. The sequence of steps was only recommended, not mandatory.

The Origination Checks appeared as boxed items in the cockpit scans. They needed only to be accomplished prior to the aircraft's first flight of the day, return to service after maintenance, or if First Flight items had not been signed off in the maintenance log book.

The captain's cockpit scan was to include the verification that the elevator trim was "SET." The first officer's cockpit scan was to include the verification of the trim indicators.

Before Start Checklist

The Before Start Checklist required that the captain review the dispatch release and sign it. He was also required to review the maintenance release and the dispatch release with the first officer.

First Flight of the Day Checklist

After the engines had been started the checklist required that a "First Flight of the Day" check be performed by the flightcrew. The expanded items of the "Electric Pitch Trim" check included;

ELEV TRIM
Switch.....ON
Pilot's and Copilot's Trim
Switches.....CHECKED

- 1) Pilot's trim will override copilot's trim.
- 2) Movement of only half switch will not activate trim.

Trim Disconnect Switch.....PRESS TO 2ND LEVEL AND
RELEASE

- 1) PITCH TRIM OFF Annunciator - ILLUMINATED
- 2) Electric Pitch Trim - DEACTIVATED

ELEV TRIM Switch.....OFF then ON

PITCH TRIM OFF Annunciator - EXTINGUISHED

Electric Pitch Trim.....SET FOR
TAKEOFF

Taxi Checklist

According to the expanded procedures for the TAXI CHECKLIST, it instructed the Captain to "Verify proper trim indicator positions (UP 2 Units UC & 3 Units UE, Roll 0, Yaw 0) and state 'SET.' Procedures also instructed the First Officer to complete the same task.

For informational purposes of this report, the following checklists, which dealt with the elevator trim system, were available to the flightcrew.

Abnormal Checklist

The Colgan Air Beech 1900 Company Flight Manual section for abnormal procedures (UE Airplanes) included a checklist for "ELECTRIC PITCH TRIM INOPERATIVE (PITCH TRIM OFF Annunciator)." The checklist item was;

- ELV TRIM Switch CYCLE OFF and BACK to ELEV TRIM

The checklist was a command and response checklist, with the corrective task being accomplished by the NFP at the direction of the captain.

Emergency Checklist

The Colgan Air Beech 1900 Company Flight Manual section for emergency procedures (UE Airplanes) included a checklist for "UNSCHEDULED ELECTRIC ELEVATOR TRIM (IF INSTALLED)."

The memory items (to be performed by the flying pilot) were;

1. Airplane Attitude.....MAINTAIN (using elevator control)
2. Control Wheel Disconnect Switch.....DEPRESS FULLY (PITCH TRIM OFF Annunciator ILLMINATED)

The checklist items were;

3. Manually re-trim airplane
4. Elev Trim Switch (located on the pedestal).....OFF (PITCH TRIM OFF Annunciator EXTINGUISHED)

The checklist was a command and response checklist, with the corrective task being accomplished by the NFP at the direction of the captain.

I. Manufacturer Approved Flight Manual Procedures

According to a Beech 1900D Airliner FAA Approved Airplane Flight Manual, Normal Procedures section, it provided procedures by flight phase, which included preflight inspection procedures.

The preflight inspection process was to be initiated in the cockpit area, and the pilot performing the inspection was to assure that the elevator trim was "SET 1 1/2 UNITS NOSE UP." The pilot was to then proceed outside the airplane, where the elevator trim tabs was verified in the "NUETRAL POSITION." The elevator trim tab neutral position was determined by observing that the trailing edge of the elevator trim tab aligns with the trailing edge of the elevator, when the elevator is resting against the downstops with the elevator trim wheel set 1 1/2 units up.

The Beech 1900D Airliner FAA Approved Airplane Flight Manual, Normal Procedures section, also provided guidance to set the elevator trim for take off. It included:

Elevator Trim...SET FOR TAKEOFF

- Set trim in FWD range for C.G.'s in forward half of envelope.
- Set trim in AFT range for C.G.'s in aft half of envelope.

I. Simulator Evaluations

Members of the Operational Factors Group convened at Flight Safety International (FSI), Flushing, New York, on November 25, 2003, to observe company procedures in a Beech 1900 simulator.

The FSI simulator was an FAA certified Level "D" Beech 1900 full motion simulator. It had cockpit controls and displays similar to the accident airplane with some minor differences. The Operations Group agreed that 1 unit of trim movement on the manual trim wheel, would equal 1.6 degrees of trim tab movement on the elevator. Due to the limitation of the simulator trim system, the maximum downward trim setting was about 5 units. The trim system was not reversed for the tests.

The simulator was pre-programmed with the following parameters:

Departure Airfield - HYA runway 24
Takeoff weight - 13,907 pounds
Fuel - 3,200 pounds
C.G - 281 inches
Flaps - 0 degrees
Power Setting - 3,500 pounds of torque

Temperature - 23 degrees Celsius
Wind - 240 degrees at 5 knots

A simulator plan was developed by the Operational Factors Group that would incorporate the use of ATC communications, FDR data, recorded weather data, and Colgan Air SOPs. The goal of the plan was to observe the performance of the simulator as it was flown through pre-determined scenarios, and to observe pilot reactions.

The Operations Group agreed to the following:

The takeoff trim setting would be set to .5 units down prior to application of power, based upon the FDR data, as opposed to 3 units UP as specified in the taxi checklist. About 5 seconds after rotation, the pilots control wheel trim switch would be deactivated, and the manual trim wheel would be rotated an additional 1.5 units down. About 20 seconds after rotation, the manual trim wheel would be rotated downwards to it's stop. About 30 seconds after rotation, the airplane would be turned to the left, increasing the turn to about 30 degrees of bank. After the 90-degree point of the turn, the power would be decreased to idle. The turn would be continued until the 180-degree point.

An FSI instructor operated the simulator during the evaluations.

A pilot from Colgan Air Inc. occupied the left seat as the flying pilot, and a representative from the FAA, who had extensive experience in Beech 1900's, occupied the right seat and would perform the duties of NFP. The captain was assumed to have been the flying pilot.

During the first test flight, the airplane was positioned onto the approach end of runway 24. Power was applied to the pre-determined setting of 3,500 pounds of torque, and the brakes were released. Upon liftoff, the pilot flying commented that the airplane was extremely heavy during and after the rotation. About 5 seconds after the rotation, the NFP rotated the manual trim wheel about 1.5 degrees downward. The pilot noticed an increase in downward pressure. About 20 seconds after rotation, the NFP rotated the manual trim wheel to it's full nose down position. The airplane continued to climb to an altitude of about 1,200 feet indicated. Upon reaching the 90-degree point in the turn, the NFP decreased the power to idle. The airplane instantly began a descent, and the pilot attempted to maintain control. The airplane continued the descent and impacted the water at a nose down attitude; however, the simulators hydraulic limits were exceeded during the pilot's attempt to pull after power reduction. The pilot's were not able to arrest the descent.

The second test flight was performed using the same profiles. All of the same findings were noted as the first test.

RAC 000290

Additional test flights were performed to observe the simulators performance to different pilot inputs. All of the same flight control, power, and timing settings were used for the tests, unless noted.

On the third test flight, after the 90-degree point, the power was reduced in increments, about 400 pounds of torque at a time, until the power was at the idle position. The airplane continued the descent, and with both pilots pulling on the yoke, the pilot's were not able to arrest the descent.

On the fourth test flight, the power was reduced to the idle position, and then gradually increased to maintain an IAS of 170 knots IAS, +/- 10 knots. The airplane continued the descent, and was unrecoverable.

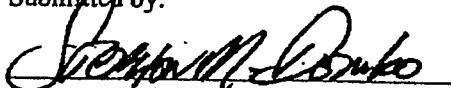
On the fifth test flight, the right seat occupant flew the airplane. As the power was reduced at the 90-degree point, the airplane began a decent. The airplane continued the descent, and was unrecoverable.

On the sixth test flight, the power was reduced gradually to maintain an IAS of 170 knots, +/- 10 knots. The airplane continued the decent; however, the airplane was flown to the ground, touching down at an IAS of 180 knots.

The group elected to discontinue the testing due to fatigue of the test pilots, and the fact that the test pilots were becoming to familiar with the flight control malfunction.

The Operational Factors Group concluded simulator evaluations and observations on November 25, 2003.

Submitted by:



Stephen M. Demko
Senior Air Safety Investigator, NERA
January 12, 2004

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 9

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9-13-2005

1

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE EASTERN DISTRICT OF VIRGINIA
3 ALEXANDRIA DIVISION

COPY

10 RAYTHEON AIRCRAFT COMPANY

11 Defendant, 12

13 Reston, Virginia

14 Tuesday, September 13, 2005

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1 Q Do the left-hand threads cable from
2 the pedestal tab control come off the aft side
3 or the forward side of the barrel?

4 A Aft side.

5 Q That's what this figure depicts?

6 A Yes.

7 Q That the left?

8 A With reference to the cable that you
9 just --

10 Q The left-hand threads cable comes off
11 the aft?

12 A Excuse me, I'm looking at this upside
13 down. Do you mind if I turn it around? The
14 left-hand threads are off of the forward section
15 of the cable. I'm used to looking at this right
16 side up.

17 Q Okay. So the left-hand threads cable
18 from the pedestal tab come off the forward side
19 of the barrel?

20 A Yes. Shown here. This arrow shows
21 forward, this is the forward cable. And
22 left-hand thread cable from the pedestal tab.

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1 steps in the procedure.

2 A That's what it says.

3 Q Am I correct in understanding that
4 each of the steps in there is sufficiently
5 important that it might cause injury or death if
6 not followed?

7 A If the warning states perform all
8 steps of this procedure, comma, in the order
9 listed, do not skip any steps of this procedure.

10 Q Looking down to step U on that page,
11 then, it talks about installing a cable block?

12 A Yes.

13 Q Are you familiar with what a cable
14 block is?

15 A Yes.

16 Q What is it?

17 A It's a block of wood or phenolic
18 that's used to clamp a cable or a series of
19 cables together so that it would hold them in
20 position and keep them from being moved during
21 maintenance operations and replacements, cable
22 maintenance in general and for rigging purposes

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1 from time to time.

2 Q And looking on the second page of your
3 report, you indicate the cable elevator trim
4 cables were not properly blocked resulting in
5 the cable unwinding off the forward drum. How
6 do you know the cable unwound because of a
7 failure to properly block?

8 A It slacked. If you didn't block them,
9 you disconnected them, the cables go to slack.
10 If any movement to the trim quadrant were to
11 occur, the potential for the cable coming off of
12 the drum is very high.

13 Q Do you have any basis in the record
14 for that conclusion, for that possibility, I
15 guess?

16 A Well, it's known because of the
17 documents that I've read that that did not
18 occur. And, in fact, that the cable did come
19 off the drum on the first attempt to repair the
20 airplane and it was danged as a result of that.
21 So they had to replace it.

22 Q Okay. Did you give any consideration

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1 to the forward cable coming off of its drum.

2 BY MR. ALMY:

3 Q You didn't read anything about it?

4 A No. I don't recall reading anything
5 about it. I overheard a conversation from an
6 engineer that indicated that there was no way
7 that that could happen.

8 Q Which engineer?

9 A I don't recall his name right now. He
10 was a Beech engineer that was assigned to assist
11 with the processes when we were in Wichita doing
12 the filming.

13 Q So you're assuming it was a result of
14 slack in the system that resulted in the cable
15 coming off the drum?

16 A No, I'm not assuming that at all.

17 Q What evidence do you have that it came
18 off?

19 A It was reported that the first cable
20 that they were -- when they were doing
21 maintenance on the tail of the airplane, it's my
22 understanding that the first cable came off of

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1 the drum. It's also my understanding that it
2 had nothing to do with the trim actuators. It
3 had everything to do with the fact that they had
4 not blocked the cables when they were performing
5 the maintenance.

6 Q And where did that understanding come
7 from?

8 A I have read a lot of documents in
9 this. It was probably depositions of mechanics
10 that stated that they hadn't blocked them.

11 Q Okay. Where is it -- did you come to
12 your understanding that the failure to block
13 caused the elevator or the elevator trim drum,
14 forward trim drum cable to come off the drum?

15 A Well, if they were blocked correctly,
16 then somebody was moving the trim while the
17 cables were disconnected in order to achieve
18 that derailment of that forward cable. The fact
19 of the matter is the cable is damaged and it had
20 to be replaced.

21 Q So other than what somebody said you
22 don't know whether the blocking resulted in the

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1 to personnel and damage to the equipment?

2 MR. JONES: Object to the form.

3 Vague.

4 THE WITNESS: Could you rephrase the
5 question for me? I know it was a pretty good
6 question.

7 Can you read it back to me?

8 BY MR. ALMY:

9 Q Are you in agreement with Raytheon
10 Aircraft that the blocking, failure to block the
11 cable may result in injury to personnel and
12 damage to the equipment?

13 A Well, I'd have to say I probably would
14 disagree in one way. Without blocking the
15 cables you can damage equipment. But if you
16 don't block the cables, and if you do damage
17 equipment, then certainly aircraft technicians
18 with the capability of performing the task
19 correctly would have to find the problems and
20 correct those problems before the airplane was
21 put back into service.

22 The blocking is a good idea. It makes

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1 a lot of sense. Blocking is one method of
2 holding the cables into position. It's
3 acceptable. It's taught in the very basics of
4 trying to achieve an A and P license. And in
5 all the courses that I've ever taught in
6 airframe, blocking was an extremely important
7 part of the general knowledge of an A and P
8 mechanic.

9 Q It's your opinion, then, that removing
10 the elevator cables or the mechanic removing the
11 elevator cables should have reinstalled them or
12 been available at the time of the reinstallation
13 of the elevator trim cables; is that correct?

14 A I want to read along with you. Could
15 you tell me what page?

16 Q Page two, second dot from the bottom.

17 A You didn't read that in the entirety
18 did you? Do you want me to read that in its
19 entirety?

20 Q Just answer the question. Did the
21 mechanic removing the elevator cables, should
22 have reinstalled them or been available at the

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1 already been critical of the blocking.

2 Q So we got marking and blocking.

3 Anything else relating to the sequence?

4 A They didn't use lead lines when they
5 removed them.

6 Q You refer to marking. What markings
7 are you referring to?

8 A To identify the cables so that when
9 the lead lines are pulled through you can
10 transfer the markings to the new cable, mark
11 them, pull them back through and make a
12 reconnection to the aft cables.

13 Q Do you know what markings are on the
14 cables, premarked?

15 A Premarked on the --

16 Q Yes.

17 A It varies. Some of the cables have
18 just an MS or an AN number. I have seen some of
19 them have no MS or AN but they do have an L or
20 R. I think it depends on the vendor on the --

21 Q What's the L or the R?

22 A Left-hand thread, right-hand thread.

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1 BY MR. ALMY:

2 Q Yes or no?

3 MR. HALL: I'm not sure it can be yes
4 or no. You talked about the figure with the
5 arrow forward as installed.

6 BY MR. ALMY:

7 Q You can look at it. It's Figure 201.

8 A They're stating, of course, which is
9 installed that way that it will be reversed.

10 Q Correct. That's the way A.J. did it?

11 A No. Because you can't install it that
12 way. You have to turn it 180 degrees to get it
13 into the system. You have to do that. And
14 there is nothing that says to rotate this thing
15 180 degrees before you put it on.16 Q If you install the cable the way
17 Figure 201 indicates and then turn the drum
18 around 180 degrees and install it, you will get
19 reverse trim operation?

20 A That's correct.

21 Q And what A.J. did was wrap the cable
22 on in accordance with Figure 201 and then turn

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1 **different than the Colgan mechanics did?**

2 A I'm not sure that he did or didn't. I
3 don't remember whether Colgan actually marked
4 that at the bend. But the bend is a pretty good
5 reference. So I think that's why the note
6 indicates that it can be. When the cable is
7 installed on the drum it sets a very slight
8 permanent bend at the center point. If you
9 stretch the old cable out with the new cable,
10 it's an acceptable way to prepare the other
11 cable for installation on the drum.

12 Colgan didn't comply with M. They
13 withdrew the cables from the airplane. There
14 was no lead lines attached.

15 **Q You indicated that he marked the**
16 **pulleys with a T. When did he do that?**

17 A That was done before we got there.

18 **Q Well, you don't know who did it?**

19 A I don't know who did it.

20 **Q What was your understanding of what**
21 **the markings meant?**

22 A I have no idea what they meant. They

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1 it was installed incorrectly. And the airplane
2 was released with a trim system that was not
3 functional.

4 Q I think you just said that the
5 inspections were not done properly. I know
6 that's not precisely what you said.

7 A Well, the operational checks to
8 confirm that the system operated as intended
9 could not have been accomplished.

10 Q But the reason the aircraft wasn't
11 airworthy was because the trim system wasn't
12 operating properly, isn't that correct?

13 A That's correct.

14 Q Were there some inspections that were
15 not done or that you have some criticism with?

16 A The operational check of the trim
17 system was not accomplished or it was not
18 accomplished properly or it would have indicated
19 that there was a complete reversal of this
20 flight control.

21 The aircraft was released with the
22 trim system operating reverse, in reverse from

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1 Q Okay. 43. Both of those require that
2 the information be provided on the aircraft log
3 for use by the pilots?

4 A No. The information has to be
5 recorded in the aircraft's logs, an appropriate
6 entry has to be completed before the aircraft is
7 released and returned to service.

8 Q I guess I'm just not clear. You said
9 they had to provide this information to the
10 pilots.

11 A This was the first flight after
12 maintenance. Their procedures manuals require
13 that the pilot review the maintenance that had
14 been performed on the aircraft before they take
15 this airplane into the air.

16 Q Which?

17 A It was first flight of the day, first
18 flight after maintenance.

19 Q Where does it require that in the
20 Colgan procedures that the pilots review the
21 maintenance?

22 A If I could have another short break,

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1 The airworthiness release or log entry
2 required by paragraph A of this section must,
3 one, be prepared in accordance with the
4 procedures set forth in the certificate holder's
5 manual including a certification that the work
6 was performed in accordance with the
7 requirements of the certificate holder's manual,
8 all items required to be inspected were
9 inspected by an authorized person who determined
10 that the work was satisfactorily completed, no
11 known conditions exist that would make the
12 airplane unairworthy, and, so far as the work
13 performed is concerned, the aircraft is in a
14 condition for safe flight, and be signed by an
15 authorized certificated mechanic or repairman
16 except that the certificated repairman may sign
17 the release or entry only for the work for which
18 he is employed or certificated.

19 Notwithstanding paragraph B3 of this
20 section, after maintenance, preventative
21 maintenance, or alterations performed by a
22 repair station certificated under the provisions

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Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 10

Page 1

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Exhibits 1-11

UNITED STATES DISTRICT COURT

DISTRICT OF MASSACHUSETTS

- - - - - CONSOLIDATED UNDER

YISEL DEAN, et al.

CASE NO. 05-10155 PBS

Plaintiffs

v.

CA No. 05 CV 10155 PBS

RAYTHEON COMPANY, a Delaware
corporation, et al.

Defendants

- - - - -
LISA A. WEILER, et al.

Plaintiff

v.

CA No. 05 CV 1034 PBS

RAYTHEON COMPANY, a Delaware
corporation, et al.

Defendants

- - - - -
DEPOSITION of JOHN J. GOGLIA

Monday, September 18, 2006 - 9:20 a.m.

Dwyer & Collora, LLP

600 Atlantic Avenue

Boston, Massachusetts

Reporter: Jill K. Ruggieri, RMR/CRR

1 A Ultimately?
 2 Q Yes.
 3 A We went to the tail, because the airplane
 4 was having control problems. The flight
 5 data recorder, while we were still on scene,
 6 gave us some valuable information that led
 7 us back there.
 8 Q Okay.
 9 A So while all the other things continued to
 10 be done, a special focus will start zeroing
 11 in on that area.
 12 Q And eventually, the probable cause of the
 13 accident was determined by the NTSB?
 14 A Yes, yes.
 15 Q What was the probable cause?
 16 A Oh, it was misriggering the airplane, as a
 17 broad statement. I don't remember verbatim
 18 what it said.
 19 Q Do you know what portion of the tail was
 20 misriggered?
 21 A It was an elevator.
 22 Q Not elevator trim?
 23 A Well, it could have been the trim. I don't
 24 remember.

1 Q You don't remember?
 2 A (Witness shakes head.)
 3 Q And in connection with your investigation in
 4 this case, did you ever go back and look at
 5 the Charlotte accident?
 6 A No. Other than what my memory provided.
 7 Q Well, this case involves elevator trim?
 8 A Mm-hmm.
 9 Q Which is certainly different rigging from
 10 elevator trim, right?
 11 MR. BUNIS: Objection. I think you
 12 may have misspoken.
 13 A Yes, you said the same thing twice.
 14 MR. BUNIS: I think you said this
 15 case involves elevator trim which is
 16 certainly different from elevator trim.
 17 MR. KNIGHT: Oh, did I say that?
 18 Well, let me correct it.
 19 Q The case involving Hyannis involves elevator
 20 trim, right?
 21 A Yes.
 22 Q The case involving Charlotte, do you know
 23 whether or not that involved elevator
 24 rigging as opposed to trim?

1 A I believe it was elevator rigging.
 2 Q So that's a different set of system?
 3 A Different cables. Related but different.
 4 Q Well, it's in the -- it's connected to the
 5 elevator, but it's --
 6 A Yes.
 7 Q It works differently?
 8 A Yes.
 9 Q And you indicated that you were responsible
 10 for that investigation as the designated
 11 NTSB member for Charlotte?
 12 A Responsible's not the right word, probably.
 13 Q Okay.
 14 Why don't you --
 15 A Because the IIC is responsible for the
 16 investigation.
 17 Q Right.
 18 A The board member is responsible for
 19 communications in a number of different
 20 areas, and in a general sense to ensure that
 21 the IIC has everything necessary to
 22 accomplish the job.
 23 Q Okay.
 24 You went down to Charlotte once?

1 would be reasonable in expecting that the
 2 mechanic would follow it?
 3 A Yes.
 4 Q And the manufacturer would likewise be
 5 reasonable in expecting that the maintenance
 6 mechanic would stop if there were any
 7 confusion or ambiguity or any question about
 8 how to carry out the task, right?
 9 A Yes.
 10 Q This -- what you called a super-find
 11 discovery of validation, do you --
 12 (Pause.)
 13 A Okay.
 14 Q Do you have in mind my -- the beginning of
 15 my question? I'll repeat it.
 16 A Please repeat it.
 17 Q You're going to send me a note there?
 18 A I have -- I wrote down something that I
 19 would like to follow on with what you just
 20 said.
 21 Q Well, would you do it right now so we don't
 22 lose our train of thought?
 23 A Okay.
 24 When you talked about the

1 lot in.
 2 Q But in terms in aviation safety, you don't
 3 dispute the notion that if there's any
 4 doubt, any confusion, that the mechanic
 5 should stop?
 6 A That's correct.
 7 Q Because he has to follow the manual?
 8 A Yes.
 9 Q And if the manual doesn't make it clear to
 10 him, he should stop?
 11 A Yes.
 12 Q All right.
 13 Now, this -- what you call this
 14 super-find discovery of validation, which
 15 Mr. Scheidt discussed with you regarding
 16 manuals and keeping those manuals accurate
 17 and up to date, do you know of any other
 18 aircraft manufacturer that has such a system
 19 in place?
 20 A Oh, yes, they all have it, a validation
 21 process, yes.
 22 Q Okay.
 23 And do you know specifically which
 24 ones do?

1 manufacturer reasonably being expected and
 2 so on and so on, there was two questions
 3 there.
 4 Q Yes.
 5 A On the flip side of that, it's also
 6 reasonable for the mechanic to expect that
 7 the maintenance manual will be accurate and
 8 that it will be correct.
 9 Because as an FAR requirement under
 10 121/135, he has to follow the manual. If
 11 the manual isn't accurate and he does
 12 something, he's committed a violation.
 13 So he gets nailed by the FAA by
 14 violating and not following the manual, but
 15 the manufacturer has given him instructions
 16 that are not adequate to have him accomplish
 17 the task.
 18 So they're partners at this point in
 19 time.
 20 Q Mm-hmm.
 21 A If the manual is not accurate, they're going
 22 to serve the mechanic up to the FAA.
 23 Q Yes?
 24 A And that's the area that I've been working a

1 A Well, I'm very familiar with Boeing's.
 2 Q Boeing?
 3 A Boeing's process of validation.
 4 Q How does that work?
 5 A They actually take the manuals beforehand --
 6 in the year --
 7 Let's back up a second.
 8 In the year that the manufacturers --
 9 about a year -- the manufacturer flies the
 10 finished product in its certification
 11 trials, what they will do is --
 12 Q The year before?
 13 A Before they give it to an airline to fly, so
 14 let's take the 777, for example. United
 15 got -- I think United got the first one.
 16 For a year before that, they flew
 17 that airplane all around the world. Some of
 18 it was sales tours. Some of it was
 19 operating experience, ETOPS experience.
 20 And what they did was all the
 21 maintenance they performed on that airplane
 22 they did in accordance with the manual.
 23 They actually took the manual with them.
 24 The manufacturer doesn't have to do

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1 A About proceeding to do some work.
 2 Q What work?
 3 A Continuing with this repair. They kept
 4 calling -- they called Raytheon three times
 5 that night. I don't know how many times
 6 they stopped --
 7 Q What was the subject matter of those
 8 telephone calls?
 9 A All I know is that they called. I don't
 10 know.
 11 Q You don't know if it was about part numbers
 12 and actuators?
 13 A I know some was part numbers and actuators.
 14 All part of the job.
 15 Q Did any of it in your understanding have
 16 anything to do with how to wrap the cable
 17 around the drum?
 18 A I have no knowledge of that.
 19 Q Okay.
 20 Anything with any of the basics of
 21 the procedures, about blocking, using lead
 22 lines, anything like that?
 23 A Not that -- I'm not aware of any of that.
 24 Q All right.

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1 A Yes.
 2 Q And if it came off the drum --
 3 A Off the pulleys, is probably what they would
 4 know.
 5 Q Off the pulleys?
 6 A Mm-hmm.
 7 Q Well, if the tension was released off the
 8 pulleys, it would be -- the tension would
 9 also be released off the drum; isn't that
 10 correct?
 11 A Yes, but the drum is a lot -- the cables in
 12 the drum are more tightly controlled than on
 13 a pulley.
 14 Q Okay.
 15 But in any event, they would know
 16 that by releasing the tension, the cables
 17 could very well come off the drum?
 18 A Yes.
 19 Q And they would know that they could get
 20 kinked when they came off the drum, right?
 21 A Well --
 22 Q Possible?
 23 A One of the possibilities.
 24 Q Right.

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1 So you are aware of what's in the
 2 deposition?
 3 A Right.
 4 Q And that had to do with actuators; is that
 5 correct?
 6 A That's the only questions that were asked.
 7 Q All right.
 8 But, again, let's be more -- let me
 9 be more specific with respect to the
 10 maintenance people.
 11 Putting aside the use of the
 12 actuators and which part numbers would be
 13 the proper actuator to be used, just the
 14 procedure for replacing the cables for the
 15 elevator trim system --
 16 A Okay.
 17 Q -- would you agree that it's basic practice
 18 that they would know that the elevator trim
 19 system is under tension?
 20 A Yes.
 21 Q And if the elevator trim system is under
 22 tension, then you would expect them to know
 23 that if they released the tension, it could
 24 very easily come off the drum?

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1 And so one of the first things that
 2 they had to be aware of as a certified A&P
 3 is to block the cables, right?
 4 A Yes.
 5 Q What is blocking the cables?
 6 A It just means capturing them, keeping some
 7 tension on them.
 8 Q Keeping the tension on them?
 9 A You can't keep a lot of tension but just a
 10 little bit.
 11 Q Enough to keep them on the drum and the
 12 pulleys?
 13 A Yes.
 14 Q And they would know that as a certified A&P?
 15 A Yes, but if it doesn't call that out in the
 16 manual, they can't do it legally.
 17 Q You're saying because something isn't in the
 18 manual such as blocking, they can't legally
 19 do it?
 20 A Yes. You have to follow the instructions
 21 for continued -- in a 121 environment.
 22 Q Are you saying that under 121, they could
 23 not block the cables because it -- because
 24 blocking the cables was not part of the

1 opinion, was the manufacturer in this case,
 2 Raytheon, reasonable in expecting that
 3 certified maintenance mechanics would use
 4 lead lines in this case?
 5 A I think the manufacturer was reasonable in
 6 expecting anybody to perform maintenance to
 7 follow the manual.
 8 Q What about the use of lead lines?
 9 A That's in the manual.
 10 Q The manual says to use lead lines?
 11 A Yes.
 12 Q And they didn't use lead lines?
 13 A That's correct.
 14 Q And as a result, they crossed the cables?
 15 A Correct.
 16 Q And as a result, the accident happened?
 17 A Correct.
 18 Q So do you fault the maintenance personnel in
 19 not using lead lines in this case?
 20 A I fault a number of people, including the
 21 maintenance people.
 22 Q Because certainly the maintenance people, if
 23 they had used lead lines, this accident
 24 wouldn't have happened?

1 pilot's license, but you've learned how to
 2 fly, right?
 3 A I was a student pilot.
 4 Q What airplane?
 5 A J2, J3.
 6 Q Does it have trim on the elevator?
 7 A No.
 8 Q Had no trim?
 9 A I don't recall the trim.
 10 Q Have you ever flown an airplane with trim?
 11 A Yes.
 12 Q Like what?
 13 A A Piper Tri-Pacer.
 14 Q Did you manipulate the trim when you flew
 15 it?
 16 A I don't recall. I'm sure I did.
 17 Q It's pretty basic how trim works?
 18 A (Witness nods.)
 19 Q Isn't it?
 20 A Well, it is pretty basic, but you really
 21 just follow the arrows when you look down,
 22 so you're looking nose-up or nose-down, and
 23 trim accordingly, or left or right if you
 24 have a rudder trim.

1 A They would have not crossed those cables,
 2 which made it convenient to put the drum in
 3 by the picture instead of the way it should
 4 have been.
 5 It helped facilitate that.
 6 Q What helped facilitate --
 7 A By crossing the cables, it helped facilitate
 8 their ability to put the cable on the
 9 drum --
 10 Q Right.
 11 A -- the way it was depicted in the diagram as
 12 compared to the way it should have been.
 13 Q Because the only way to get the cables to
 14 connect on the drum the way they wrapped it
 15 is to cross the cables?
 16 A Somewhere.
 17 Q All right.
 18 Does virtually every maintenance
 19 mechanic know that when the trim tab goes
 20 up, the nose of the airplane goes down?
 21 A When they focus on it, yes, but I'll tell
 22 you what, once you get away from it, you've
 23 got to really stop and think again.
 24 Q You said you've learned -- you don't have a

1 Q And it has an immediate effect on the yoke?
 2 A Yes.
 3 Q Or the stick?
 4 A Yes.
 5 Q Right?
 6 A Subtle but immediate, yes.
 7 Q But any maintenance mechanic understands how
 8 trim works, elevator trim?
 9 A Yes, it's taught in school in the basic
 10 form, yes.
 11 Q Right and so isn't it also basic to any
 12 maintenance, if you make a repair on any
 13 system, you test it to see if it works?
 14 A Yes.
 15 Q And with respect to aviation maintenance,
 16 it's even more important, isn't it?
 17 A As compared to?
 18 Q Well, if you attempt to fix something in
 19 your car and it runs out of gas or
 20 something, you didn't check it, you might
 21 just pull over on the side of the road with
 22 no risk of harm to anybody, right?
 23 A The mechanical tasks, whether it's in a car
 24 or an airplane, there's some that are very

1 wasn't the manual.

2 Q So getting back to our pilot, isn't it true
3 that it's just one more provision for safety
4 that a pilot will check the system that was
5 worked on as part of his preflight to make
6 sure that it works?

7 A You can't answer that question yes because
8 you have to -- does the pilot know what was
9 worked on to check? Does he know how to
10 check what was worked on?

11 What does the flight operations
12 manual call for him to check on?

13 So there's many pieces --

14 Q In this case, do you know whether or not the
15 pilot knew what was being worked on?

16 A He had some knowledge of what was going on.

17 Q What knowledge did he have?

18 A Well, he showed up early for the flight, and
19 it wasn't ready, so he knew they were in
20 there working.

21 Did he know which system they were
22 on? Again, I don't know.

23 Q All right.

24 With respect to basic requirements of

1 maintenance personnel at the tail, they
2 would be in a position to see whether or not
3 the trim tab was moving up or down?

4 A Correct.

5 Q Right?

6 And you were able to see that on a
7 1900, right?

8 A Yes.

9 Q And the person in the cockpit would be able
10 to see which way the -- the trim wheel was
11 moving when the trim tab was moving at the
12 rear, at the tail, right?

13 A Correct.

14 Q And the person at the -- at the controls
15 would also be expected to operate the
16 electric trim system; is that correct?

17 A That's correct.

18 Q And he would operate the trim system with
19 his thumb; is that where it is?

20 A Pickle switch, they call it.

21 Q Pickle switch.

22 You push forward, and it's nose down.

23 Push back, nose up?

24 A Correct.

1 maintenance, one of -- we've already agreed
2 there are at least two rules: If you have
3 any questions, stop. Number two, follow the
4 manual.

5 Would the third rule be that in
6 carrying out any maintenance or repair on
7 flight control systems that the maintenance
8 personnel would want to test to make sure
9 that the system worked as it was intended?

10 A I will answer yes, with my understanding of
11 testing in the context that you just used
12 it, which is an operational check.

13 Q An operational check. Okay.

14 And when an operational check with
15 the elevator trim system, if the operational
16 check is to be carried out properly, you
17 would properly have a man or woman in the
18 cockpit, as well as one at the tail; is that
19 right?

20 A That's correct.

21 Q And then there would be some communication
22 between the two, right?

23 A That's correct.

24 Q And you would -- with respect to the

1 Q Right?

2 And the pilot in doing that would
3 certainly see how the wheel was moving,
4 right?

5 A He would see the wheel is moving.

6 Q You would see which direction it was moving?

7 A Well, if he focused on it, yes, and if the
8 FOM called for -- well, I don't know what
9 the FOM says, so...

10 Q What is the FOM?

11 A Flight operations manual.

12 Q Yes.

13 And the flight operations manual also
14 requires the pilot to do a preflight; isn't
15 that also true?

16 A Yes.

17 Q And the -- part of the preflight is to
18 operate the trim system electrically, right?

19 A Just to see if -- I don't think it says to
20 go full travel, but just to see if it moves.

21 Q All right.

22 A Yes.

23 Q And the pilot sitting there with a copilot
24 next to him and operating the trim system,

1 But if he says I just moved it, okay,
 2 and I see it up and I'll look at the
 3 protractor and say I'm looking for 15
 4 degrees, picking a number --
 5 Q That would be an inadequate check?
 6 A That's right. And that's why you include
 7 those checks in the manual.
 8 Q Now, getting back to the -- what basic
 9 maintenance practices require in an
 10 operations check, you indicated full range
 11 of movement; is that correct?
 12 A Yes.
 13 Q To the stops?
 14 A Right, yes, to the stops, right.
 15 Q And you would operate -- in doing an
 16 operations check, you would do that with the
 17 electric trim system and the manual trim
 18 system, right?
 19 A Common sense says you would do it, but
 20 oftentimes you would do it maybe with the
 21 manual system and make sure the electric
 22 trim is running.
 23 Q Okay.
 24 So if you did it with the manual

1 system, you would want to make certain it
 2 went to the designated stop points on the
 3 wheel, right?
 4 A Mm-hmm.
 5 Q Yes?
 6 A Yes.
 7 Q Well, the maintenance people in this case
 8 that worked on this elevator trim system
 9 could not have done that, could they?
 10 A No, they could not have done that.
 11 Q So they didn't do an operations check,
 12 right?
 13 A They didn't do a full check as I -- as you
 14 would find it in the maintenance manual for
 15 rigging.
 16 Q They didn't do --
 17 A Maybe we ought to call it a functional
 18 check.
 19 Q They didn't do a functional check to
 20 determine whether or not the trim system
 21 went to the full range of movement?
 22 A I understood that they did do --
 23 Q Well, they could not have checked the wheel,
 24 because if they had put the trim tab full up

1 or full down, it would not -- the wheel
 2 would not have had the marking on it that
 3 would have been appropriate for full up or
 4 full down?
 5 A Okay. Yes.
 6 Q Right?
 7 A Yes, all right. That's different than what
 8 you asked me a minute ago. Okay?
 9 Q So they didn't do that check?
 10 A They did not compare full travel with the
 11 markings on the wheel, assuming the markings
 12 were there and --
 13 Q If they had done that, they would have known
 14 there was a discrepancy?
 15 A Yes.
 16 Q And they would have stopped, hopefully?
 17 A Yes.
 18 Q Right?
 19 A Yes.
 20 Q You agree that a -- an original equipment
 21 manufacturer such as Raytheon is in a
 22 position to reasonably expect that
 23 maintenance personnel working on its
 24 aircraft for repairs to flight control

1 systems will carry out an operational check
 2 which would include full range of movement
 3 not only based on the electrical trim system
 4 but also the manual trim system; is that
 5 correct?
 6 A I would expect the instructions for
 7 continued airworthiness -- I would expect
 8 those to be complete and whatever was
 9 required to be contained therein.
 10 Q And would you agree it is reasonable to
 11 expect that maintenance personnel in
 12 carrying out repairs on flight control
 13 systems will carry out the customary
 14 operational functional check to make sure
 15 that the system works the way it's intended?
 16 Q MR. BUNIS: Objection. You can
 17 answer.
 18 A Yes, I would expect them to follow the
 19 instructions.
 20 Q And the maintenance people for Colgan who
 21 worked on this airplane could not have done
 22 that; isn't that correct?
 23 A That's correct.
 24 Q Do you fault them for that?

1 A Well, they'd have a problem. Work on it,
 2 have a problem -- when I went back, I think
 3 there was one new guy there. He may not
 4 have been new to Colgan but new to the
 5 station.
 6 Q Yes?
 7 A And there was some discussions around what
 8 to do next.
 9 Q He didn't have the experience to know?
 10 A He was trying to follow the paperwork and he
 11 couldn't, so there was some verbalization of
 12 the problem back.
 13 Q Yes.
 14 A And I didn't study it, but just from what I
 15 saw, it had my -- had me concerned.
 16 Q You had to wonder why they didn't block the
 17 cables.
 18 A There's a whole -- a bunch of steps that I
 19 wonder why they didn't do.
 20 Q They didn't use lead lines.
 21 You had to wonder about that?
 22 A Right.
 23 I'm less concerned with the lead
 24 lines than you are. The blocking on the

1 What's the date on that? What's the
 2 date on that? Is that preaccident or
 3 postaccident?
 4 Q This comes from one of the plaintiffs'
 5 experts' opinions. It has some text above
 6 it which we can disregard for purposes of my
 7 question, but this is the figure --
 8 A My question was, is that the picture
 9 preaccident or postaccident, because it
 10 changed postaccident.
 11 Q The plaintiffs' expert says this is the
 12 incorrect depiction of the trim drum.
 13 A Okay.
 14 Q Assume that Figure 11 shows the incorrect
 15 depiction.
 16 A Okay.
 17 Q What is incorrect about that, Mr. Goglia?
 18 A Well, as you're sitting on the pedestal, if
 19 you don't pay attention to what's forward,
 20 in this case, forward is back, and that
 21 arrow is not very prominent.
 22 Q The arrow forward as installed?
 23 A Mm-hmm.
 24 Q So --

1 cables I'm concerned with, because you're in
 2 the tail, things fall down the side, it's a
 3 pain in the neck to get to.
 4 If you've been around it and you've
 5 routed them before, that's --
 6 Q Had they ever done a routing of the elevator
 7 trim cable before?
 8 A I didn't see that answered directly, but
 9 there was comments indirectly you could get
 10 the cables through there, so somebody
 11 obviously in that group was there.
 12 Q And then they kinked the cables and went to
 13 replace it and rewinded it on the drum and
 14 wrapped it incorrectly?
 15 A Okay. Follow the picture instead of the
 16 instructions, which is common when you can't
 17 read the words, you look at the picture.
 18 (Exhibit No. 11 marked for
 19 identification.)
 20 BY MR. KNIGHT:
 21 Q Is what has been marked as Exhibit --
 22 A 11.
 23 Q -- 11 the figure that you're talking about?
 24 A Yes.

1 A So the typical layout --
 2 Q So you think that should have been larger
 3 print?
 4 A Definitely should have been in larger print.
 5 The arrow should have been clearer.
 6 In almost all the drawings, this type
 7 of drawing in the manuals, forward is always
 8 away from you, so it's in some ways
 9 counterintuitive.
 10 Q Is that the error of the figure?
 11 A I would say that's the most glaring one. I
 12 don't see any others. It's pretty thin;
 13 pretty skimpy drawing.
 14 Q So if they had seen the arrow forward as
 15 installed --
 16 A Would have been a big clue.
 17 Q -- then they would have -- they would have
 18 wrapped it correctly?
 19 A Right.
 20 Because, you know, what you're going
 21 to do if you have the paperwork and you're a
 22 little bit unfamiliar, you're going to take
 23 this out and you're going to have it at the
 24 pedestal where you're doing the work; and

1 essentially this drum is accessible through
2 the left-hand side of the pedestal.

3 So as you're looking at this and the
4 pedestal, it's backwards; it's opposite.

5 You need to have it this way (indicating).

6 Q And do you know if it's able to be installed
7 as it's depicted in this figure?

8 A As --

9 Q Can it be installed on pedestal?

10 A No, no, it can't.

11 Q As it's depicted?

12 A No, it can't.

13 Q You read the deposition testimony of the
14 maintenance people at Colgan, right?

15 A Yes.

16 Q And what is your basis, if any, of -- of
17 suggesting that they were confused or
18 uncertain about how to proceed with this
19 step?

20 A Just in the way they talk about it.

21 You guys deposed them, or somebody --
22 I shouldn't say you guys. Somebody deposed
23 them.

24 And if you follow the questioning,

1 it over themselves, because the airplane
2 sat, and the same people came back the next
3 night.

4 So the roll of a turnover at that
5 point in time is much less than if I was
6 turning over a job to you.

7 Q Did you see that they didn't actually have
8 the paperwork completed when the airplane
9 left Hyannis?

10 A I did see that. I did see that.

11 Q The paperwork would include the signature of
12 the designated inspector?

13 A I did see that.

14 In checks, though, however, in
15 checks -- you know what a check is, A, B, C
16 or one through six, it's not uncommon for
17 the paperwork package to be totally complete
18 with the airplane is done.

19 It's a small crew of people. I
20 think there's six people there. It makes it
21 a little bit --

22 Q Isn't the designated inspector required to
23 determine that the airplane is airworthy at
24 the time it leaves the shop?

1 the way they answered them, you can see
2 where they're uncertain.

3 Q Was there anything specific in their
4 testimony that you can point to?

5 A No. I'm trying to think through all of
6 them, because I read four or five of them.
7 I forget how many there are.

8 Did I see a sentence that said we
9 were confused or we didn't know what we were
10 doing? No.

11 It's more like a sense from the flow
12 and how they're going that it wasn't going
13 very well.

14 Q They did make several bad judgments along
15 the line.

16 Was one of them the -- in your
17 opinion the failure to use turnover or
18 transfer notes from one shift to the next?

19 A I looked at that. I'm a big turnover
20 person, communications, and I didn't see
21 where it would have changed anything, but I
22 would have liked to have seen the turnover.

23 And part of the reason why I say that
24 is they were actually at one point turning

1 A There is final check. He can rely upon
2 signatures for people that the work is
3 completed. You have to look through their
4 manual to determine it. Their manual does
5 say this now, or it -- or the version that I
6 looked at.

7 Like I said early on, I don't have
8 the preaccident version completely. It had
9 been revised.

10 So my comments are going to be framed
11 in that, that I could be talking about
12 postaccident manual.

13 Q Yes.

14 A But the manual frames what you have to do
15 and who is responsible. And it frames it in
16 such a way that says if you did the work and
17 you sign on the dotted line, that I -- I
18 have the right to rely upon that signature.
19 That's the -- as the person releasing the
20 airplane.

21 Q Mm-hmm.

22 A Now, there's another piece to this. The
23 airworthiness release, depending on the work
24 that is done, does not always have to be

1 Q When you say "these errors were the cause of
 2 this crash," perhaps you'd like to modify
 3 that statement?

4 It was a factor?

5 A I can say that it was a factor. It was
 6 probably one of the leading ones, but it was
 7 a factor. You're going to make me rewrite a
 8 probable cause contributing to this?

9 Q Well, the probable cause, actually -- it
 10 stated what the probable cause was.

11 And then it said, "Factors were the
 12 flight crew's failure to follow the
 13 checklist procedures and the aircraft
 14 manufacturer's erroneous depiction of the
 15 elevated trim drum in the maintenance
 16 manual," right?

17 A Right.

18 Q But the cause was really maintenance, what
 19 the maintenance people did?

20 A It's --

21 MR. ELBERG: Object.

22 A It's a collective maintenance failure.

23 Q They didn't do the operational check, most
 24 important?

1 A They may have routed them right up to the
 2 end.

3 Remember I mentioned to you about
 4 going to the -- going down there to look at
 5 where they crossed them, trying to determine
 6 where they crossed them?

7 Q Yes.

8 A They may have -- they may have crossed them
 9 right there at the end, although there's
 10 some feeling that that's not the case. But
 11 it's all -- it just depends on who looks at
 12 it.

13 Q But they had to have crossed them?

14 A They crossed somewhere.

15 Q So even with this tape that they used, it
 16 clearly was an inadequate method to ensure
 17 that you didn't cross them. They crossed
 18 them?

19 A Right, they crossed them.

20 And that gets to the instructions in
 21 the maintenance manual not being detailed
 22 enough to mitigate all the possible mistakes
 23 that people make.

24 Q Well, you can't write a manual that will

1 A Properly, didn't do it properly.

2 Q You could add up the number of errors made
 3 by maintenance, and you probably --

4 A More.

5 Q -- five or more errors done by maintenance
 6 that really caused this crash?

7 A (Witness nods.)

8 Q In your -- the next sentence or two, you
 9 say, "The erroneous drawing could and did
 10 cause the mechanic to misroute the cable
 11 around the drum."

12 But, again -- and I think I've
 13 already asked you about this -- they had to
 14 have made the next error, which was crossing
 15 the cables, in order to do this?

16 A Right, to get it to line up.

17 Q But you didn't mention that next error in
 18 your report, did you?

19 A I don't believe I did.

20 Q And they have tagged, according to what you
 21 said in the report and the deposition
 22 testimony, they tagged the cables with tape?

23 A Mm-hmm.

24 Q And they still misrouted them?

1 have all the possible mistakes that somebody
 2 might make?

3 A I would say that you can in the areas that
 4 are critical to flight. I wouldn't want a
 5 manual, you know -- we don't want -- a
 6 coffee maker is not going to bring an
 7 airplane down, but flight controls certainly
 8 are.

9 So you want to make sure that your
 10 instructions are as detailed as they humanly
 11 possibly can be and as clear and concise as
 12 you can make them.

13 Q Okay.

14 But the more things you say in a
 15 manual, the less likely that it will be read
 16 and understood?

17 A Today, I think I might agree with that.

18 Q So if you tried to foresee every possible
 19 mistake that somebody might make, you're
 20 going to have much too much language in
 21 order to ensure that they properly
 22 understand the basic steps to carry out the
 23 procedure; isn't that true?

24 A Well, routinely across the board, I would

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 11

1 UNITED STATES DISTRICT COURT
2 FOR THE DISTRICT OF MASSACHUSETTS

3 YISEL DEAN, et al.,

4 Plaintiffs,

5 vs. Case No. 05-CV-10155-PBS

6 RAYTHEON COMPANY, a Delaware
7 Corporation, RAYTHEON AIRCRAFT
8 HOLDINGS, INC., a Delaware
9 Corporation, RAYTHEON AIRCRAFT
10 COMPANY, a Kansas Corporation,
11 RAYTHEON AIRCRAFT CREDIT
12 CORPORATION, a Kansas Corporation,

13 Defendants.

14 LISA A. WEILER, et al.,

15 Plaintiffs,

16 vs. Case No. 05-CV-10364-PBS

17 RAYTHEON COMPANY, a Delaware
18 Corporation, RAYTHEON AIRCRAFT
19 HOLDINGS, INC., a Delaware
20 Corporation, RAYTHEON AIRCRAFT
21 COMPANY, a Kansas Corporation,
22 RAYTHEON AIRCRAFT CREDIT
23 CORPORATION, a Kansas Corporation,

24 Defendants.

25 DEPOSITION OF:MICHAEL E. MADDOX, Ph.D., CHFP

DATE: October 4, 2006

TIME: 8:59 a.m.

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1 probably why I marked that.

2 Q. Did that have any particular relevance
3 to this case?

4 A. Well, it might in that the maintenance
5 was performed over different days by different
6 people on the aircraft. So it could relate to
7 that. It just depends on, you know, what you're
8 interested in knowing about that aspect of human
9 error.

10 But like I said, I tend to put Post-it
11 notes in books and then forget why I put them
12 there.

13 Q. So was your use of this text related to
14 some particular piece of it or just the whole thing
15 as being helpful to give you some context?

16 A. Well, the whole thing. It basically
17 brings me up to date on what we know about
18 maintenance error, why it occurs, how it occurs,
19 some of the techniques that have been employed in
20 order to prevent maintenance error or manage it, et
21 cetera.

22 Q. Now, when you say, what we know about
23 human error, what do you mean by that phrase?

24 A. What we in the human factors field know
25 about human error. Most of the human error

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1 use them. That's the general statement.

2 Q. And that applies to all walks of life?

3 A. Pretty much every domain in which
4 people interact with systems or products, which is
5 most domains. There are very few domains that are
6 purely automatic. Now, when you get into the area
7 of, say, circuit design, electronic circuit design
8 or something like that, where circuit components
9 are interacting with other circuit components, the
10 only human factors aspect of that we'd be concerned
11 about is the design activity itself, the testing
12 activity perhaps, verification of the circuit
13 components, validation that it actually does what
14 it's supposed to do and the usage of the product in
15 the end, but the individual circuit components
16 interacting don't have any human element in there.
17 But for the most part, I would be hard pressed to
18 find a domain that didn't have some type of human
19 interaction.

20 Q. So what's been your particular
21 background in human factors, what industry?

22 A. Well, across a variety of industries,
23 actually. I have not specialized in a particular
24 industry, but I started -- my background is that I
25 have a bachelor's degree in physics and I started

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1 research has been done by the people who are
2 actually human factors researchers and
3 practitioners, and so over the past 40 years or so
4 we have acquired quite a bit of collective
5 knowledge regarding human error: Why it occurs;
6 how it occurs; what works and what doesn't work to
7 decrease the likelihood of human error; what
8 factors tend to increase the likelihood of human
9 error. Especially in the maintenance domain, we
10 know a lot about the locus of serious human error.
11 That's been studied quite a bit. And so that --
12 when I say we, I'm talking a collective we, the big
13 human factors we.

14 Q. Let's talk about human factors and your
15 background in it.

16 A. Okay.

17 Q. I gather what you just described was
18 human factors generally. Is that accurate?

19 A. It's one aspect of it, certainly.

20 Q. What other aspects are there?

21 A. Well, human factors is basically the
22 science and practice of ensuring that human
23 capabilities and limitations are built into systems
24 and products so we make systems safe, usable and
25 within the capabilities of the people we expect to

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1 as an instrumentation engineer in the nuclear
2 industry and worked for several years. I then went
3 back to graduate school in human factors and got
4 advanced degrees in human factors from Virginia
5 Tech. My graduate work was primarily in the area
6 of visual perception. In particular, how your
7 visual system processes, what it sees in the real
8 world.

9 Two years after I received my Ph.D., I
10 actually conducted day-to-day a project that looked
11 at the performance of military photo interpreters
12 with analog and digital imagery.

13 After that I started working for a
14 company called the Institute of Nuclear Power
15 Operations, which was formed after the Three Mile
16 Island accident and consisted of all of the nuclear
17 power utilities in the United States -- and in
18 fact, most of them in the world. I worked on
19 elements reviews of nuclear power plant control
20 rooms, emergency procedures, task analysis, layouts
21 of backup control panels, just the classic kind of
22 human factors types of things of people that
23 interact with the system.

24 After that two years I worked for five
25 years with a company called Search Technology, and

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1 that they had printed copies of the procedure, not
 2 the electronic copy, with them when they were doing
 3 them.

4 Q. So what's your understanding as to
 5 which version of the manual was being used, paper
 6 or electronic, when these mechanics worked on the
 7 forward cable?

8 A. It depends on which time you're talking
 9 about. They said they had the paper copy of the
 10 procedure, but it's unclear to me whether it was
 11 printed from the REPS system, the CD, or whether it
 12 was simply a printed copy from a printed manual.

13 Q. So you don't know whether they were
 14 using the actual book or a printed copy of the
 15 electronic version?

16 MS. SCHIAVO: Objection, for the
 17 record. Go ahead.

18 THE WITNESS: It's my understanding
 19 they were using a printed copy of the electronic
 20 record. I believe they testified to that.

21 BY MR. JONES:

22 Q. And so you know, the one we've marked
 23 here, 98, says across the top: REPS, Raytheon
 24 Electronic Publication System. That's the
 25 indicator that this came out of the electronic

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1 cable and like the cable tension, that type of
 2 thing. This is referenced in the -- I believe it's
 3 referenced when they talk about reinstalling the
 4 cable, they reference this procedure.

5 Q. This one being --

6 A. I'm sorry -- referencing procedure
 7 27-30-05 dash 201.

8 Q. So in other words, 27-30-04, which is
 9 the process to replace the cable, cross references
 10 the mechanics to 27-30-05, the rigging check?

11 MS. SCHIAVO: Objection. Go ahead.

12 THE WITNESS: Yes. Step U, rig the
 13 cables to the proper tension as indicated in Figure
 14 201, and then Step -- I'm sorry, that's not Step U,
 15 that was Step T. Step U is, rig the cables as
 16 outlined in elevator trim rigging, and they both
 17 reference 27-30-05.

18 BY MR. JONES:

19 Q. You say you've reviewed also the
 20 elevator control cable process; is that right?

21 A. Briefly. I mean, I looked at it when I
 22 saw it was the elevator. I didn't bother really
 23 paying that much attention to it.

24 Q. As it relates to work done on the
 25 actuator, were you aware that the mechanics were

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1 version. Is that consistent with your
 2 understanding, or is that news to you?

3 A. Yes. It's sort of irrelevant, but yes.
 4 It should be the same procedure, right.

5 Q. Well, I understand the concept is the
 6 same, but I'm asking you if you know one way or the
 7 other whether they used the electronic or paper
 8 version.

9 A. My recollection is they said they
 10 printed the procedure from the electronic version
 11 and that's what they had with them.

12 Q. 97 is 27-30-09. Do you recognize that
 13 as one of the procedures you reviewed?

14 A. Yes.

15 Q. What is that?

16 A. This is the operational check for
 17 elevator trim.

18 Q. And then 99 is another section,
 19 27-30-05. Do you recall having reviewed that?

20 A. Yes. This is the rigging procedure.

21 Q. What do you understand the difference
 22 to be between the rigging procedure and the
 23 operational check?

24 A. The rigging procedure is actually the
 25 procedure for determining certain factors of the

1 reprimanded for not following all the steps in the
 2 process of replacing the actuator?

3 MS. SCHIAVO: Objection. Go ahead.

4 THE WITNESS: I might have read
 5 something about that, but it didn't make an
 6 impression on me.

7 BY MR. JONES:

8 Q. Do you remember that?

9 A. I remember several mentions of
 10 reprimands for not signing off on procedures, that
 11 type of thing, but I don't recall the exact context
 12 of that, no.

13 Q. Did becoming aware that the mechanics
 14 involved in this process had been reprimanded for
 15 skipping steps impact your analysis of how this
 16 event unfolded?

17 MS. SCHIAVO: Objection. Go ahead.

18 THE WITNESS: I don't recall being
 19 aware that they skipped steps, but their behavior
 20 and anything I read about it really didn't impact
 21 my analysis other than to support it.

22 BY MR. JONES:

23 Q. So you're not aware that the mechanics
 24 in this case skipped steps in the procedures
 25 involved?

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1 BY MR. JONES:

2 Q. What's that?

3 A. Well, they didn't testify to that level
4 of detail, that they went from one set of pulleys
5 to the next set of pulleys. They simply said the
6 turnbuckles won't pass through some of these
7 pulleys, we need to remove them, which is what they
8 did.9 So to answer your initial question as
10 to how that would defeat the use of lead lines,
11 these pulleys are sometimes grouped into a single
12 bracket so the pulleys are right next to each other
13 with nothing really between them, nothing physical
14 between them. If I pull those two pulleys out of
15 the bracket, then regardless of whether I have lead
16 lines or I don't have lead lines, it would be
17 possible to confuse which side of -- which lead
18 line or which side of the cable went through each
19 pulley when I reinstalled the pulleys or
20 reinstalled the cables because there are just two
21 pieces of line going through a single bracket.
22 There is nothing to distinguish which pulley side
23 it should attach to.24 Q. Other than Figure 202, which shows the
25 routing of the cable, right?1 that the turnbuckles themselves are already marked
2 at the manufacturer, so the left-hand thread
3 turnbuckle is already -- there is a different
4 physical configuration on the right-hand
5 turnbuckle. There's a little dimple on it.

6 BY MR. JONES:

7 Q. And that's what marks it, is a dimple?
8 A. It's a dimple or a little colored dot.

9 I was shown the difference. They are different.

10 Q. And you can look at a thread of
11 something and know whether it's right-hand or
12 left-hand threads, can't you, just by observing it?

13 MS. SCHIAVO: Objection.

14 THE WITNESS: Not necessarily. I mean,
15 you don't typically relate it to that type of
16 thing.

17 BY MR. JONES:

18 Q. You wouldn't expect an experienced
19 mechanic to make those kinds of observations?

20 MS. SCHIAVO: Objection.

21 THE WITNESS: Depends on where that
22 mechanic is observing, what the conditions are
23 like, how big the threads are.

24 BY MR. JONES:

25 Q. But if you can see them and the

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1 A. Yeah. I mean, if you can figure it out
2 from that, yeah, that would help.3 Q. That's what its purpose is, Figure 202,
4 is to show you that routing, isn't it?

5 MS. SCHIAVO: Objection.

6 THE WITNESS: I have no idea what its
7 purpose is. I mean, one would hope there would be
8 something to show you routing, but this is very
9 circuitous routing, not nearly so clear as in this
10 diagram.

11 BY MR. JONES:

12 Q. Part of the process of using lead lines
13 under Step G of 27-30-04 is to mark the cables to
14 identify which end is which, right?

15 MS. SCHIAVO: Objection. Go ahead.

16 THE WITNESS: It doesn't say that.

17 BY MR. JONES:

18 Q. What it says specifically is attach
19 lead lines to the aft ends of the forward cables
20 and properly identify them to facilitate
21 reinstallation.22 Do you know what the options are for
23 how you would identify the ends?

24 MS. SCHIAVO: Objection. Go ahead.

25 THE WITNESS: I don't know. I know

1 lighting is good, you should be able to determine
2 whether it's left-hand or right-hand threads?

3 MS. SCHIAVO: Objection.

4 THE WITNESS: Not necessarily. That's
5 why they mark the turnbuckles, because it's not
6 obvious just looking at the threads.

7 BY MR. JONES:

8 Q. And these mechanics replacing this
9 forward cable did not use lead lines, did they?10 A. That's my understanding, that they did
11 not.12 Q. Now, they employed a different system
13 of trying to keep track of where the cables should
14 end up in the pulleys, right?

15 MS. SCHIAVO: Objection. Go ahead.

16 THE WITNESS: My understanding is they
17 did, yes.

18 BY MR. JONES:

19 Q. Do you know what the system is that
20 they devised?21 A. I'm still not quite sure I understand
22 it, but apparently they marked the pulleys
23 themselves with a T to designate one side or the
24 other of the cable that should be routed through
25 there.

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1 Q. Did it make sense to you how that
 2 procedure would help them keep track of which is
 3 left-hand and right-hand threads?

4 A. It didn't necessarily make sense to
 5 me. It apparently made sense to them.

6 Q. Are there any other criticisms you have
 7 of the written steps in 27-30-04 besides the lead
 8 line step?

9 MS. SCHIAVO: Objection, for the
 10 record. Go ahead.

11 THE WITNESS: If you look at page four,
 12 the elevator trim cable installation, Step H,
 13 reinstall the pulleys that were removed for
 14 routing, I can't find any -- well, it's two things.
 15 I can't find any step in the removal steps that
 16 said to remove pulleys, if you need, to for
 17 routing. The other thing is, the presence of the
 18 step says that whoever wrote this procedure was
 19 aware at some point that pulleys might have to be
 20 removed. If you're aware that pulleys might have
 21 to be removed, then using lead lines is not a
 22 logical routing job aid, if you will, without some
 23 other ancillary process in place, or ancillary
 24 tool.

25

1 page three?

2 A. Okay. Cool. So you know the pulleys
 3 are going to be removed -- so I missed that --
 4 which provides even more of a question in my mind
 5 as to why lead lines would ever be --

6 Q. Let's deal with your first criticism of
 7 H, though. You first say that it's there without a
 8 prior step speaking about taking out pulleys. You
 9 retract that opinion now, correct?

10 A. Well, this isn't actually -- it's a
 11 note, it's not a step, okay, so --

12 Q. But it's there, right?

13 A. Well, there is a caution there.
 14 There's other notes. A note is not a step in the
 15 procedure. Procedures -- there's very strict rules
 16 about how procedures should be written and about
 17 how notes and cautions should be put in there. If
 18 you want somebody to do something, you put it in a
 19 step.

20 Q. So should the manufacturer not be able
 21 to expect the mechanic will read the note?

22 MS. SCHIAVO: Objection.

23 THE WITNESS: The note -- I would be
 24 perfectly legitimate to go through this procedure
 25 and not read the notes. If you want me to do

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1 BY MR. JONES:

2 Q. Like the use of 202, the routing
 3 diagram?

4 A. Well, whether or not you can follow
 5 202 -- I mean, that's still an open issue, but if
 6 you look in the pedestal of the airplane versus
 7 Figure 202 where everything is really nice on a
 8 white sheet of paper, you can see inside the
 9 pedestal of the airplane. We have photographs that
 10 show what it looks like in the pedestal.

11 Q. But in any event, Figure 202 does show
 12 the routing of the cable across the pulleys from
 13 the pedestal to the turnbuckles, correct?

14 A. It purports to do so. I don't have any
 15 idea.

16 Q. You don't have any information that
 17 it's inaccurate in that regard, do you?

18 A. I do not know.

19 Q. So what's your criticism of Step H on
 20 page four?

21 A. Well, there are two. There is no
 22 corresponding step in the cable removal process.
 23 It's telling me to put stuff back together that it
 24 never told me to take apart.

25 Q. What about Item C, the first note on

1 something, put it in a step that tells me I have to
 2 do it. For example, if this were in a job card
 3 format, there would be no place for me to initial
 4 this note, which says, okay, I did that much.

5 However, I will grant you that it does
 6 say here that, yeah, you can remove pulleys because
 7 they can't be cleared by the turnbuckles. So given
 8 that the procedure recognizes that, why would you
 9 worry about attaching lead lines?

10 BY MR. JONES:

11 Q. That goes back to your criticism about
 12 the lead line step, right?

13 A. Yeah. It's simply -- the fact of the
 14 matter is, the cables only attach -- the ends of
 15 the forward cable only attach to the aft cable one
 16 way. So regardless of how you have to route that
 17 cable, if you get it back through the fuselage and
 18 you've got the right turnbuckle on the right side,
 19 regardless of what's happened on those pulleys up
 20 front, you're going to assume that you've got the
 21 right part of the forward cable attaching to the
 22 right part of the aft cable.

23 Q. And conversely, if you get back to
 24 those turnbuckles and your threads don't match what
 25 they're supposed to match, you know something is

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1 tabs so they measured the deflection. They
 2 essentially did the ops check on an ad hoc basis;
 3 that is, they had a person in the cockpit change
 4 the analog trim position and they measured it at
 5 the tail. There was an inspector and one of the
 6 mechanics who measured it at the tail using a
 7 digital protractor.

8 Q. I'm sorry to cut you off. We'll talk
 9 about that process in detail, but right now I was
 10 just asking what was your understanding of what was
 11 to be done next, and what I understood you to say
 12 was they needed to do an ops check?

13 A. That's correct.

14 Q. Now, taking this in pieces and stepping
 15 back in part, there is a difference between a
 16 rigging check and an ops check, right?

17 A. I would I assume there would be. An
 18 ops check is a functional check. A rigging check
 19 is a detailed check of tensioning, et cetera.

20 Q. We talked earlier about how 27-30-04
 21 refers the mechanic over to 27-30-05, the rigging
 22 checks, right?

23 A. Yes, at one point it does.

24 Q. Did you study 27-30-05 to determine
 25 whether, if it were performed properly, it would

1 perform this check are proper. If all of that is
 2 true and there is an understanding, there is a
 3 communication protocol, et cetera, yes, it would
 4 help reveal the reverse rigging.

5 Q. What about the communication issue that
 6 concerns you about the ability to reveal the
 7 anomaly using the rigging check?

8 A. There are two major issues I have with
 9 communication. First of all, just the ability to
 10 communicate from the tail to the cockpit. We saw
 11 during our inspection visit that it's not easy to
 12 communicate from the tail to the cockpit. We were
 13 using cell phones to communicate. It's the
 14 testimony of the inspector that they had no radios,
 15 they had no telephones, that they were simply
 16 yelling information between the cockpit and the
 17 tail.

18 Q. Now, is that an observation of the
 19 situation or a criticism of the procedure?

20 A. Well, the procedure depends on there
 21 being communication between the cockpit and the
 22 tail, and so to the extent that that communication
 23 is typically not good, or not high quality, I
 24 should say, just the simple fact of being able to
 25 understand what somebody is saying or hear

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1 have revealed the anomaly of the reversed rigging?

2 A. Well, it's unclear, actually. I think
 3 it's unclear whether it would have because of the
 4 use of the travel board and the communication
 5 between the tail and the cockpit. Assuming -- let
 6 me just read this for a second.

7 Q. I'm sorry to interrupt again, but I'm
 8 trying to do this in really small pieces. My first
 9 question is, did you undertake to try and determine
 10 whether the performance of 27-30-05 would have
 11 revealed the anomaly, not what your result was if
 12 you did. I'm just trying to determine whether that
 13 was part of your task.

14 A. Yes. My task was to examine the
 15 activities that took place both before and after
 16 the rigging.

17 Q. So you did review 27-30-05?

18 A. I did read through this, yes.

19 Q. And you analyzed it in terms of whether
 20 these steps would have helped reveal the anomaly?

21 A. Well, when you say these steps, you're
 22 assuming that all of the steps are doable -- right?
 23 This procedure, as far as I know, was never
 24 verified by Raytheon -- and that all of the
 25 communication in the different parties required to

1 someone -- there is ambient noise, there is
 2 distance, there is the fact that there is a person
 3 in the cockpit and another person on the tail and
 4 there is a fuselage between the two of them that
 5 makes communication difficult, so --

6 Q. Again, is that an observation of the
 7 scenario or a criticism of the procedure?

8 A. Well, I don't know how you separate the
 9 two, but the procedure depends on communication.
 10 There is nothing in this procedure that says get a
 11 walkie-talkie and talk to the person in the cockpit
 12 and tell them to do this, and when they do that,
 13 you do this.

14 Q. Are you suggesting that the procedure
 15 should have included something like that?

16 A. Without a communication protocol,
 17 you're depending on certain factors to be in play,
 18 certain things to take place, and you don't know if
 19 it's possible for them to take place or not.
 20 Suppose it's noisy in the hangar -- I mean, that
 21 would be a classic situation -- how do I ensure
 22 that those people communicate properly? And this
 23 goes also to my second point. There is no
 24 established communication protocol for determining
 25 what position a trim tab has been moved to.

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1 check did not find the anomaly was that the
 2 electric trim switches were used to move the trim
 3 instead of the manual wheel. Can you explain that?
 4 A. Yes. The way the system is actually
 5 rigged is that even with a misrigged forward
 6 control cable, the electric trim motors will
 7 actually move the trim in the proper direction, the
 8 commanded direction, using the trim switches on the
 9 yoke, the pilot's and the copilot's yoke. So if
 10 I'm a technician in the cockpit and I think I'm
 11 supposed to go to full nose up trim, I conceivably
 12 could use the pilot or copilot's trim switch to do
 13 that and move all the way, or at least as far as
 14 the electric trim motors would allow me to move,
 15 until it won't move any more. If I did that, the
 16 trim would actually move in the proper direction.
 17 As I explained here, that doesn't fully explain how
 18 you could then measure the appropriate angles that
 19 you were looking for.

20 Q. What's your issue there about the
 21 appropriate angles?

22 A. Well, if the -- assuming that the
 23 forward control cables was misrigged, it puts --
 24 let me go back a minute. The trim tabs have cable
 25 stops on them so that they could only move upward

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1 Q. Even when rigged properly?
 2 A. Even when rigged properly. That's my
 3 understanding.
 4 Q. Where do you get that particular
 5 understanding?
 6 A. I read it in some of this material.
 7 Q. But these three things we've just
 8 talked about that you read in other material are
 9 things that you simply read in other material, not
 10 that you went out and checked on your own, right?
 11 A. Well, we didn't have a misrigged system
 12 when we were out there, so I couldn't say. Now, we
 13 did run the electric trim all the way up and all
 14 the way down.
 15 Q. Did it go to full deflection?
 16 A. We didn't measure, so I don't know.
 17 Q. So you go on to say in your report that
 18 use of the electric trim switches to move it for
 19 purposes of doing a rigging check doesn't explain
 20 why the angle measurements didn't arouse suspicion.
 21 A. Right. Why they -- because you
 22 couldn't -- it's my understanding of the way -- the
 23 maximum trim deflections would be different than
 24 what is spelled out in the specs.
 25 Q. So why wasn't it caught?

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1 or downward a certain -- to a certain angle; and
 2 typically they can move more nose up than nose
 3 down. They could move 16 and a half degrees nose
 4 up -- yeah, 16 and a half degrees nose up, 5 and a
 5 half degrees nose down. When you misrig, you
 6 reverse that and you would not be able to go to 16
 7 and a half degrees nose up. So the electric trim
 8 switches, or electric trim motors -- I'm sorry --
 9 if you try to go to full nose up, it would actually
 10 stop somewhere before 16 and a half degrees.

11 Q. And the source of your information for
 12 that is what?

13 A. I thought I read that somewhere,
 14 actually, that the electric trim was not able to
 15 move the trim all the way up -- I frankly don't
 16 remember -- but it's clear that it would, in the
 17 NTSB analysis, assume that since it's misrigged you
 18 could actually move to 16 degrees nose down on the
 19 trim.

20 Q. Where did you find that?

21 A. It's in one of the reports that I read.
 22 I don't recall. My point is that the electric
 23 trim, even if it's rigged properly, supposedly will
 24 not move the trim to the same maximum deflections
 25 as the manual trim wheel.

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1 A. Well, I don't think they used the
 2 electric trim. I was just talking about one
 3 possible explanation and just going through the
 4 logical possibilities.
 5 Q. So you raised one and then you found a
 6 reason why it was unlikely?
 7 A. Yeah. I found a reason that wouldn't
 8 really explain how you could go through that whole
 9 check and not notice it.
 10 Q. So then you move on to the next
 11 explanation, which is that there was a probably a
 12 miscommunication?
 13 A. That would be my best guess, yeah.
 14 Q. Again, is this in the context of the
 15 rigging check, 27-30-05, or the operational check,
 16 27-30-09?
 17 A. The rigging check.
 18 Q. Did you do anything to study any of
 19 Colgan's internal procedures about communication
 20 between mechanics?
 21 A. No.
 22 Q. Is there anything else you reviewed
 23 related to 27-30-05, the rigging check?
 24 A. I don't believe so.
 25 Q. Now, moving onto 27-30-09, which is

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1 BY MR. JONES:

2 Q. And we've covered that one, the rigging
3 check, 05, right?4 A. Right. And there is nothing here that
5 would require the mechanics to do this.6 Q. That's what I'm wanting to talk about.
7 If 27-30-09 had been performed -- I'm wanting to
8 know whether you studied it to determine whether
9 its performance would have revealed the anomaly.10 MS. SCHIAVO: Object, for the record.
11 Go ahead.12 THE WITNESS: I have not examined this
13 to know or to opine whether it would or would not
14 have, but the only difference that I can see
15 between this and the pilot's check is one sentence
16 in Step D and one sentence in Step E that looks at
17 direction of travel for the trim wheel.

18 BY MR. JONES:

19 Q. Let's talk about what D and E do.

20 A. Okay.

21 Q. D has the mechanic actuate both trim
22 switches on the pilot's control wheel to nose up.
23 That means he's pushing both of the split
24 switches -- or pulling them back, right, to go nose
25 up?1 Q. And you're not providing an opinion on
2 whether these mechanics knew the right direction it
3 was supposed to go or not, right?4 A. Well, I'm just commenting that the
5 procedure doesn't say what the proper direction is,
6 it just said the proper direction.7 Q. Would you expect the mechanics to know
8 that?9 A. I wouldn't depend on the mechanics to
10 know that. I would put it in the procedure.11 Q. Is there any correlation in the human
12 factors world to the number of steps given someone
13 and the likelihood that they will follow them all?14 A. No. There is not a -- I mean, there
15 may be some relationship, but there is no
16 statistical correlation that I know of.17 Q. That's not something that's discussed
18 in the human factors community?

19 MS. SCHIAVO: Objection. Go ahead.

20 THE WITNESS: Sure. We discuss all
21 kinds of things related to procedures, but the
22 procedure can have literally hundreds of steps --
23 and some do. That doesn't necessarily mean that
24 you're going to increase the odds of committing an
25 error. Mathematically, you do increase what we

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1 A. Right.

2 Q. Is that your understanding?

3 A. Nose up, yes, the switches would go
4 back or go down.5 Q. Then you note the movement of the trim
6 wheel?

7 A. Note trim wheel movement.

8 Q. Right? That's what you're supposed to
9 do for D?

10 A. Yes.

11 Q. So if you're pulling back on the trim
12 switches, if it's rigged properly the wheel is
13 supposed to rotate back, right?

14 A. Yes, that is correct.

15 Q. And if it's rigged the way this one is
16 rigged, backward, the wheel would actually move
17 forward, right?18 A. That's my understanding, that's
19 correct.20 Q. So if the mechanic is pulling back on
21 the thumb switch and looking at the wheel and sees
22 it going in the opposite direction, is that an
23 indication that there is something wrong?24 A. Assuming the mechanic knows which way
25 the wheel should travel, yes, at that moment.1 would call the cross section. It increases the
2 number of opportunities for you to do something
3 wrong.

4 BY MR. JONES:

5 Q. So the other thing that Step D asks you
6 to do is to visually verify that the tab itself
7 travels in the proper direction. And with D, it
8 says nose up means tab down, right?

9 MS. SCHIAVO: Objection. Go ahead.

10 THE WITNESS: It says visually verify
11 that the tab travels to the proper position. I'm
12 not sure how that's --

13 BY MR. JONES:

14 Q. It says in parentheses trim tab full
15 down, right?

16 A. Right.

17 Q. Which is the proper correlation, nose
18 up is tab down?

19 A. That is correct.

20 Q. So if this step were performed on this
21 aircraft with it rigged backwards, the anomaly
22 should have been revealed, right?23 MS. SCHIAVO: Objection, for the
24 record.

25 THE WITNESS: I'm not sure. First of

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1 basically what I got from his version of the story.

2 Q. From Mr. Sarluca's version?

3 A. Yes. And apparently he didn't very
4 much appreciate the fact that, at least in his
5 mind, that the technicians knew that this was a
6 possibility, that because of mismatched travel of
7 the two actuators that the cable could become slack
8 and then unwind from the drum.

9 Q. Now, are you assuming it to be true
10 that there is some sort of mismatched travel
11 between the actuators that would cause the cable to
12 come off the drum?

13 A. No, I'm not assuming that. I'm just
14 recounting what I recall from these conversations,
15 Mr. Sarluca's account of these conversations. But
16 the fact of the matter is that one of the actuators
17 did in fact have to be replaced again. It wasn't
18 appropriate, apparently.

19 Q. Did you go ahead and read Mr. Crow's
20 deposition testimony where he described this issue
21 of whether there was any differential travel
22 between the these two actuators?

23 A. I read his deposition. I don't recall
24 that detail in there, though.

25 Q. I guess the bottom line is, you're not

1 broken in half. It doesn't matter. It could have
2 had termites in it. It doesn't matter from my
3 perspective. My perspective on the misriggering
4 error really applies to the procedures that were in
5 place that told mechanics how to install the new
6 cable. I mean, that's really the crux --

7 Q. You started your analysis as of the
8 time of installing the new cable, not what happened
9 before?

10 MS. SCHIAVO: Objection. Go ahead.

11 THE WITNESS: No. I looked at all the
12 events that happened before, it's just that from my
13 perspective, all the events that happened before
14 don't really have a huge impact on this thing. It
15 just sort of establishes an environment in which
16 the repair was made. The actual error was a
17 procedural error. It was misriggering this cable.
18 So everything that happened up to that point and
19 why they had to install the new cable, that's not
20 so much an issue in the actual misriggering itself.

21 BY MR. JONES:

22 Q. So as it relates to your mentioning
23 this exchange that happened between Colgan and
24 Raytheon before the forward cable was replaced,
25 you're not in a position to say whether one side is

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Page 225

1 here, in this case, to provide an opinion that the
2 cable came off the drum in the first instance
3 because of a mispairing of the actuators or not.
4 That's just something that happened that you're
5 observing that there is a question about?

6 A. Right. And the only reason I even
7 mentioned that is that it just sort of contributes
8 to the overall environment in which the repair was
9 done, in which the maintenance was done, in that in
10 addition to the fact that the cable now has to be
11 replaced, there is talk that had Raytheon warned us
12 about this beforehand this wouldn't have happened
13 in the first place. But I don't believe that
14 actually traveled very much past Mr. Sarluca. I
15 think the other mechanics apparently knew about the
16 exchange, but didn't really think too much about
17 it.

18 Q. Of course, we have the open question of
19 whether there was any differential pull that would
20 have caused it to happen which hadn't been
21 resolved.

22 A. Yeah, from my perspective, it doesn't
23 matter. I mean, from my perspective, it doesn't
24 even matter why or how that cable came unwound or
25 why it had to be replaced. I mean, it could have

1 true or the other side is true, you're just
2 observing that this exchange happened and the very
3 happening of it had an impact on the environment?

4 A. Right. And it almost doesn't matter
5 what the true state of affairs was. I mean, if
6 Mr. Sarluca was ticked off and communicated that to
7 the mechanics, it doesn't even matter that he had
8 the conversation. It's just: Okay, now everybody
9 thinks this took place.

10 Q. So what impact might that environment
11 have on this situation?

12 A. I think it just adds to sort of the
13 frustration level all around. He's going, you
14 know, we've been in here three days with this
15 aircraft now and we wouldn't have -- you know, we
16 would have had it out the first night if this thing
17 hadn't occurred. So we know that frustration and
18 time pressure increased the likelihood of errors
19 and it's just an environmental sort of thing.

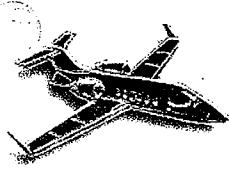
20 Q. The next section you call Consistent
21 With Human Error Research. This starts on page 21.

22 A. Yes.

23 Q. And then it has some subparts in
24 Italics. This appears to me to be an effort to
25 summarize what's been said before in the context of

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 12



AEROSCOPE, INC.

11901 Allison Street
Broomfield, CO 80020
303.465.4414 • Fax: 303.465.4116
aeroscope@aeroscopeinc.com

July 21, 2006

Ms. Mary F. Schiavo
MOTLEY RICE LLC
28 Bridgeside Boulevard
Mt. Pleasant, South Carolina 29464

Re: Dean v. Raytheon
Colgan Air Crash
Aircraft: Raytheon B1900D
Date of Accident: August 26th, 2003
Location: Yarmouth, Massachusetts

Report of Findings

Dear Ms. Schiavo:

Below is a report of my accident investigation regarding the aircraft crash that occurred on August 26th, 2003, at 1540 Eastern Daylight Time near Yarmouth, Massachusetts. Attached, as Appendix A, is my Curriculum Vitae, Appendix B. is a list of the documents I have reviewed in regard to this case. Appendix C is a listing of my trial and deposition testimony in the last 4 years.

The NTSB report, other reports, and our investigation show that on August 26th, 2003, a Beech 1900D, N240CJ, operated by Colgan Air Incorporated as Flight 9446 (d.b.a. US Airways Express) was destroyed when it impacted the Atlantic Ocean near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot, were the only occupants aboard the flight and were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts; destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan (IFR) was filed for the repositioning flight conducted under 14 CFR Part 91.

EXHIBIT 11

2. Powerplant and Nacelles
3. Flight Environment/Cabin
4. Environmental Systems/Nose
5. Landing Gear
6. Aft Fuselage/Empennage

Inspections/Checks conducted recently prior to the accident include:

1. Preflight Inspection-August 23, 2003, Flight hours-16, 499.1, Cycles-24, 627.
2. Routine Inspection-August 24, 2004-Flight Hours-16, 503.5, Cycles-24, 637
3. Check 6-August 24, 2003-Flight Hours-16, 503.3, Cycles-24, 637.

Maintenance Performed:

According to Colgan Airs Maintenance records, on August 23, 2003, aircraft N240CJ underwent a Detail 6 (D6) as part of its approved phase maintenance program using guidance from the Beech 1900D Airliner Maintenance Manual. The D6 check began at the Hyannis, Massachusetts (HYA) station beginning on August 23 at 1647 hours local.

The MPM states that the emphasis of the D6 check is on the empennage and aft fuselage, which include visual inspections, lubrications, free play checks, engine borescopes, engine mount torque checks, servicing, operational checks, and cable tension checks.

The check was interrupted partway through the inspection (procedures for interrupting checks are contained in the General Maintenance Manual (GMM) section 3.5.3) and the remaining work was deferred on August 24, 2003 at 0800. The D6 check was continued that night at 2030. The check was completed on Tuesday, August 26, 2003 at 1100.

According to Colgan Air's maintenance records, on August 24, 2003, the maintenance technicians conducted a "free play" check on the elevator trim tab actuators (ETT) as part of the D6 inspection. Maintenance found both elevator trim tab actuators to have failed the check. Failure of the actuators by this check requires replacement before further flight.

Once it had been determined the actuators needed to be replaced, a Colgan Air supervisor consulted with Raytheon's technical support by phone to verify the trim tab actuator part numbers and to ensure they had the proper actuators for installation on the accident aircraft. Raytheon's tech reps indicated Colgan Air's available spares (Part Numbers 129-526033-6 and -7) were proper for use on the aircraft (per Colgan's statement to the NTSB). Raytheon Technical Support indicated that there were Service Bulletin kits that would convert the -6 and -7 actuators to the (most recent version) -27 and -29. The Service Bulletin kits essentially modified the actuator seals and lubricant to improve cold weather operational reliability to prevent the trim tab actuators from freezing in flight.

While waiting for a response from engineering support, Colgan Air maintenance personnel elected, based on Raytheon's assurances, to install the -6 and -7 actuators with the understanding that engineering approval would be required before they could complete documentation of the installation. Informal verbal confirmation from Raytheon indicated that the -6 and -7 actuators would work. Colgan's mechanics subsequently installed the -6 and -7 actuators in anticipation of a formal confirmation from Raytheon engineering the following morning. It appears that insufficient technical data, the absence of timely engineering assistance, and Raytheon not having the newer -27 and -29 actuators in stock were the first of series of events resulting in the crash.

In the process of performing operational checks after the replacement actuators were installed, the Elevator Trim Tab (ETT) cable system bound and seized. The maintenance technician took the pedestal panels loose to ascertain the problem with the cable system. The maintenance technician documented that the "Elevator trim tab cable fell off drum under the pedestal" on Maintenance Work Order #08477. The maintenance technician discovered that the ETT forward cable had became kinked and ordered a replacement cable.

It was discovered, during post-accident interviews, that the MTS⁶ chose to omit step (c) of the Elevator Trim Tab Actuator Removal and step (i) of the Elevator Trim Tab Actuator Installation. Omission of these steps discounts nineteen maintenance steps required by the manufacturer's maintenance manual (MM) in the process of accomplishing the ETT actuator replacements (basically, removal of the elevator for easier access to the trim tab actuators). These steps guide the maintenance technician through the removal and installation of the elevator control surface(s) and are the MM procedures 27-30-02. Skipping these steps, however, had no bearing on the crash.

Per interviews with the two MTS that performed the forward cable replacement, the drum assembly was removed in the cockpit during the dayshift, prior to their assignment to the forward cable change. Non-routine discrepancies on the Detail Check were left open, indicating that work was not complete. Following the re-assembly, both MTS checked the routing of the forward cable by referring to MM 27-30-04, figure 201.⁷

Figure 201-Trim Cable Drum depiction in Raytheon's Manuals

Subsequent to the accident, it was confirmed that Raytheon's Maintenance Manual contained a figure with a deadly error. Figure 201 shows a trim drum around which is wrapped the forward most elevator trim cable. This drum is located beneath the throttle quadrant in the cockpit. The elevator trim cable is attached to this drum by laying the cable (at the cable's mid-point) at a 90-degree angle across the drum and inserting a

⁶ MTS-Maintenance Technicians

⁷ Figure 201 was determined to be incorrect in its depiction after the accident-Ramey exhibit 117. The FAA issued AD 2003-20-10 as a result of this finding. The Trim Drum for the elevator trim was found to be depicted 180 degrees from its proper orientation, leading any mechanic using this diagram to reverse the cable on the drum.

7. The incorrect instructions in the maintenance manual are further exacerbated by the lack of any specific procedure to determine if the system is installed properly following the maintenance performed.
8. The crew was further misled by the lack of information in the Flight Manual to determine that the trim system was improperly rigged.

The emergency procedures section of the Flight Manual does not mention to pilots how to deal with a grossly out of trim aircraft or, an aircraft with a reversed trim. Electric trim emergency procedure sends you straight to using the manual trim, which only compounded the problem.

9. Nothing in Airplane Flight Manual procedures addressing the fact that increasing the airspeed of the aircraft will increase the air forces on the control surfaces which in turn increase the physical load on the pilot in a miss-rigged or out of trim situation.
10. Raytheon Aircraft Company has a history of substandard documentation regarding demonstrative figures in their maintenance manuals leading mechanics to make unnecessary mistakes.
11. Raytheon Aircraft Company was aware of the erroneous figure in the B1900D aircraft maintenance manual prior to the Colgan Air crash but failed to correct the problem in a timely manner.

I reserve the right to change these opinions as new evidence is provided and discovered.

Sincerely,



Donald E. Sommer

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 13

1 IN THE UNITED STATES DISTRICT COURT
 2 FOR THE EASTERN DISTRICT OF VIRGINIA
 3 ALEXANDRIA DIVISION

4 - - - - - x
 5 COLGAN AIR, INC. :
 6 Plaintiff, :
 7 vs. : Civil Action
 8 RAYTHEON AIRCRAFT COMPANY, :
 9 Defendant. :
 10 - - - - - x

11 McLean, Virginia

12 Tuesday, July 12, 2005

13
 14 Videotaped deposition of PERRY SARLUCA, a
 15 witness, called for examination by counsel for
 16 defendant, pursuant to notice, at the offices of
 17 Dombroff & Gilmore, 1676 International Drive,
 18 Penthouse, McLean, Virginia 22101, before Sandria
 19 L. Cox, a notary public in and for the Commonwealth
 20 of Virginia, beginning at 1:10 p.m., when were
 21 present on behalf of the respective parties:

Page 1 1 I-N-D-E-X

2 EXAMINATION BY COUNSEL FOR
 3 DEFENDANT, PLAINTIFF,
 4 WITNESS MR. HALL: MR. ALMY:

5 Perry Sarluca 4, 123 116

6

7

8

9
 10
 11
 12 E-X-H-I-B-I-T-S
 13 (Exhibit No. 46 retained by Mr. Hall.)

14 SARLUCA EXHIBIT

15 No. 44 (Sarluca e-mail to Jolico) 65
 16 No. 45 (Excerpt of GMM) 107
 17 No. 46 (GMM in Entirety) 109
 18 No. 47 (Rodriguez/Sarluca Letter) 124
 19 No. 48 (Employee Counseling Form) 124

20

21

22

1 APPEARANCES:

Page 2

Page 4

2 FOR THE PLAINTIFF:

3 THOMAS B. ALMY, ESQ., Dombroff & Gilmore,
 4 1676 International Drive, Penthouse,
 5 McLean, Virginia 22101.

6 FOR THE DEFENDANT:

7 ROBERT T. HALL, ESQ., and HOLLY PARKHURST
 8 ESSING, ESQ., Hall, Sickels, Frei &
 9 Kattenburg, P.C., 12120 Sunset Hills
 10 Road, Suite 150, Reston, Virginia
 11 20190-3231.

1 P-R-O-C-E-D-I-N-G-S

2 VIDEO OPERATOR: May it please the Court,
 3 ladies and gentlemen of the jury, my name is
 4 William Sale. I'm the video have operator and
 5 producer. My business address is 3444 Fairfax
 6 Drive in Arlington, Virginia; area code
 7 703-527-5100.

8 Today is Tuesday, July 12, 2005. The
 9 time is 1:15 p.m. We're about to take the
 10 deposition of Perry Sarluca, who is a witness in
 11 the matter of Colgan Air, Inc., plaintiff, versus
 12 Raytheon Aircraft Company, defendant, Civil Action
 13 No. 1:05 cv 213 in the Federal District Court for
 14 the Eastern District of Virginia, Alexandria
 15 Division.

16 The deposition is being taken at 1676
 17 International Drive.

18 At this time would counsel please
 19 introduce themselves and their interested parties.

20 MR. HALL: May it please the Court,
 21 ladies and gentlemen of the jury, my name is Robert
 22 Hall, and together with Holly Essing, we're

Page 61	Page 63
1 A. A gentleman answered and gave me Mr. 2 Joliet's number and said I needed to call him. 3 Q. So you then called a second number and 4 talked to Mr. Joliet? 5 A. Yes. 6 Q. And Mr. Joliet said that he couldn't 7 help you unless he had a PO? 8 A. He didn't say he couldn't help me. He 9 said that he needed that and he would work with me. 10 Q. What else did he need beside a PO? 11 A. He needed all the information on what I 12 was doing, the part number of the actuators I had, 13 aircraft total time, the serial number of the 14 aircraft, the parts book in which I got the part 15 numbers out of. Basic information. 16 Q. When did you provide him that 17 information? 18 A. I provided the information on the 19 e-mail. I don't recall the time. 20 MR. HALL: If you could mark this as 21 Exhibit 1 to the Sarluca deposition. I could 22 number it with a number in sequence, but I've	1 change"? 2 A. What I meant by requesting a 3 configuration change is that these actuators are 4 installed to aircraft by the aircraft serial 5 number. 6 The IPC showed that this aircraft had 7 the 033-3 part numbers installed. The 8 configuration change that I was looking for was I 9 had a 033-7 and a 033-6 configuration change. 10 Those two particular dash numbers did 11 not fall under UE-40's serial number requirements, 12 and that's what I'm referring to by configuration 13 change. 14 Q. So the -7 and the -6 were actuators you 15 had in inventory? 16 A. Yes. 17 Q. But when you went to the IPC and looked 18 for the actuators compatible with the UE-40, you 19 did not see -7/-6 combinations. 20 A. Correct. 21 Q. And you were asking it looks like Mike 22 Jolico --
Page 62	Page 64
1 forgotten what number we were up to. 2 MR. ALMY: Why don't we just mark it "1" 3 for now and come back and change it to the number. 4 (The e-mail was marked as 5 Exhibit No. 1 for identification. 6 Same exhibit later remarked as 7 Exhibit 44.) 8 BY MR. HALL: 9 Q. Is that the e-mail that you're making 10 reference to? 11 A. Yes, it is. 12 Q. It looks like it was sent out Monday at 13 2:23 a.m.? 14 A. Yes. 15 Q. "Subject: Trim Actuators Aircraft 16 UE-40"? 17 A. Yes. 18 Q. All right, sir. One of the things it 19 says: "I am submitting a request for a 20 configuration change to UE-40." 21 So the folks watching can understand, 22 what did you mean by requesting a "configuration	1 A. Yes. Correct. 2 Q. -- at Raytheon -- 3 A. Yes. 4 Q. -- if it was okay to use the -7/-6 5 combination? 6 A. Correct. 7 Q. You conclude it, it says, "how every" -- 8 I think you mean "however," don't you? -- -- the 9 IPC usable on code will not allow me to install 10 them due to aircraft serial number requirements." 11 A. That's correct. 12 Q. And what was -- strike that. 13 Underneath this text is your 14 identification and then some more text, it looks 15 like: Remove part number -3, serial number unknown, 16 from left elevator trim and install part number -7? 17 A. Correct. 18 Q. Who typed in this text? 19 A. That is me. I was explaining to him 20 what I wanted to do. I wanted to put -7 on the 21 left side in place of that -3 and I wanted to put 22 the -6 on the right side in place of the other -3.

	Page 65		Page 67
1 Q. And then you alerted Mr. Jolico that the		1 going to get a letter, but I explained to Mr.	
2 aircraft was AOG?		2 Keenan at the same time, We can put them in, do the	
3 A. Yes. That's correct.		3 operational check, but be advised that we're	
4 Q. What was the response from Mr. Jolico to		4 waiting on this letter and that the aircraft would	
5 this e-mail?		5 not go anywhere.	
6 A. That he would have to research it.		6 And I made that known to everyone, that	
7 Q. Okay. Did you ever hear back from him?		7 that aircraft would not go anywhere until we had	
8 A. Yes, I did.		8 the letter.	
9 Q. Telephone or e-mail?		9 Q. Do you recall at what point in time the	
10 A. Telephone.		10 -7/-6 combination were in fact installed?	
11 Q. And approximately when?		11 A. Around 5:30, 6 o'clock it was completed.	
12 A. We had talked about it quite a bit.		12 Q. A.M.?	
13 Again, this other information I had to submit to		13 A. A.M. Maybe a little bit later, but	
14 him: The aircraft total time, total landings and		14 right around that timeframe.	
15 all that.		15 Q. I take it you didn't do the operational	
16 We went back and forth with it a few		16 checks until you had them installed. There wasn't	
17 times. He had to go back to another building and		17 any operation to check until they were installed.	
18 get some more information, so naturally I had to		18 A. Correct.	
19 wait a little while longer.		19 Q. What was the operational check that you	
20 He called back later. He indicated to		20 or someone was, to your knowledge, performing on	
21 me that he did not see a problem with it. However,		21 this aircraft?	
22 he needed to run it past his engineers.		22 A. Yes.	
	Page 66		Page 68
1 Q. Okay. What was your understanding of		1 Q. What was it? How do you operationally	
2 his plan to get back to you after talking with his		2 check these trim tabs after the reinstallation of	
3 engineers?		3 actuators?	
4 A. Yes. He was going to get back to me and		4 A. I don't have the book in front of me	
5 send me a copy of the letter -- of the terms of the		5 here.	
6 letter of acceptance saying that it was okay.		6 Q. Just your best recollection.	
7 Q. Did you ever get such a letter of		7 A. Best recollection, it's an electrical	
8 acceptance?		8 check and a manual check. You manually just spin	
9 A. I did not get such a letter.		9 the wheel one way, and then I need the book to have	
10 Q. Nevertheless, the -7 and-6 combination		10 all the dimensions and everything of what you're	
11 were installed on this aircraft?		11 looking for.	
12 A. Yes, they were.		12 You spin the wheel the other way and	
13 Q. By whom?		13 look for any kind of binding, any kind of	
14 A. By Dan Keenan.		14 mechanical difficulties.	
15 Q. Under whose authority?		15 And then you do an electrical check.	
16 A. Under my authority.		16 The electrical check -- those switches	
17 Q. And why were they installed in the		17 are located on the pilot's and co-pilots yoke, and	
18 aircraft absent a letter of acceptance from		18 depending on which way you're going, whether you're	
19 Raytheon?		19 going nose-up or down, you would move the switch,	
20 A. Because Mr. Jolico said to me that he		20 observe operation, and also be checking the trim	
21 didn't see any problem with it. He was going to		21 tab actuators on the back.	
22 get back with engineering. I assumed that we were		22 Q. Were you involved in the operational	

Page 69	Page 71
1 check on this system once the -7/-6 combo was in?	1 pilot turns this way --.
2 A. I was not. My attention was on the	2 Pulling it clockwise is this way?
3 other aircraft.	3 I'm not describing it on camera so maybe
4 Q. Who was doing the operational check on	4 it's not working very well.
5 this aircraft?	5 A. He would have to move it with his right
6 A. Dan Keenan.	6 hand.
7 Q. We may have the manual around here.	7 Q. Right.
8 This isn't a memory test and I'm not going to ask	8 A. Counter-clockwise would be this way.
9 you to remember anything that's in it except in a	9 Yeah, counter-clockwise would be this way.
10 general sense.	10 And clockwise would be going in a down
11 The first operational check would be	11 position.
12 manual?	12 Q. So that the folks watching this can see,
13 A. I don't believe there's any set way of	13 could you bring your hand above the table and kind
14 doing an operational check.	14 of show them.
15 Q. You could do the electric check first	15 A. Sitting in the pilot's seat, the wheel
16 and then the manual, or the manual first and then	16 is here. Clockwise would be going down in a
17 the electric?	17 clock. Counter-clockwise would be going up.
18 A. Correct.	18 Q. I call that clockwise, pulling the top
19 Q. And would it include -- I'm going to	19 of the wheel down.
20 pull the top of the manual wheel down. That should	20 A. Yes.
21 be nose-up, shouldn't it?	21 Q. Are you comfortable with that?
22 A. I don't have the book in front of me	22 A. Yes. I'm comfortable with that.
Page 70	Page 72
1 now. I don't have the aircraft here either.	1 Q. Clockwise is nose-up trim?
2 Q. No, no. I understand that.	2 A. I don't know. I don't have the wheel
3 But you know from working on 1900s, do	3 here to look at it. I don't have the actuator in
4 you not, that nose-up trim manually is to pull the	4 my mind.
5 top of the wheel down?	5 Q. So in terms of running this check, this
6 MR. ALMY: Objection. Vague. If you	6 operations check, you would have had the book open
7 understand what he's asking, go ahead. You can	7 to tell you whether clockwise was nose-up or
8 answer the question.	8 nose-down?
9 A. I would have to be looking at it.	9 A. It doesn't have any of that in the book.
10 BY MR. HALL:	10 Q. How would you know? What would you go
11 Q. In terms of Beech 1900 trim, this manual	11 to to see if it was nose-up or nose-down clockwise?
12 wheel, what does it do?	12 ?
13 A. The manual wheel?	13 A. What are we trying to see?
14 Q. Yes.	14 Q. Operations check.
15 A. The manual wheel, if you move it	15 A. Uh-huh.
16 clockwise or counter-clockwise, would cause an	16 Q. Says here in the seat after installation
17 effect on the trims.	17 of the new actuators, pull the wheel, manual wheel,
18 Q. When a pilot is sitting looking forward,	18 clockwise. How will we know whether that's nose-up
19 the manual wheel is to his right; correct?	19 or nose-down?
20 A. Correct.	20 A. It's marked on the wheel.
21 Q. And so in terms of clockwise and	21 Q. It's marked on the wheel?
22 counter-clockwise, are you suggesting that when the	22 A. Yes. The wheel is clearly marked.

Page 97	Page 99
1 Q. When you went back to the parts section 2 of Colgan Hyannis and found these two actuators 3 -7/-6, did you go to the IPC to see what aircraft 4 these serial numbers went with?	1 Q. And when maintenance is performed on a 2 control surface or its subparts, operational checks 3 are required, are they not?
5 A. Yes. I did.	4 A. Correct.
6 Q. And what did you determine?	5 Q. In terms of requirements for operational 6 checks, is that required, to your knowledge, by the 7 Federal Aviation regulations?
7 A. I determined, as I had in my letter 8 here, that they didn't fall within the serial 9 number requirements.	8 A. Sorry?
10 Q. They didn't fall within the serial 11 number for a UE-40; correct?	9 Q. Are those checks required by the Federal 10 Aviation regulations?
12 A. Right.	11 A. If they're in the book, they are 12 required checks, period.
13 Q. What serial number or serial number 14 range did the -7/-6 fit?	13 Q. And you believe they are required by the 14 Colgan General Maintenance Manual?
15 A. I don't remember.	15 MR. ALMY: Objection. The General 16 Maintenance Manual or the maintenance manual?
16 Q. But you did check?	17 BY MR. HALL:
17 A. Yeah. And just knowing me and the 18 reason why I picked these two is probably because 19 they were the closest ones to UE-40. But, again, 20 it was a long time ago.	18 Q. The Colgan General Maintenance Manual.
21 Q. Do you know how -7 and -6 differed from 22 the -3's that could have been installed?	19 A. I would have to look at the Colgan 20 General Maintenance Manual. There's various items 21 in there that they do list that require operational 22 checks. I would have to see that physically.
Page 98	Page 100
1 A. I do not know how.	1 Q. When the -7/-6 were put in and you were 2 informed that the cable had kinked, when you came 3 to the aircraft, do you know whether prior to the 4 kinking the mechanic had run the rigging procedure?
2 Q. After the crash, you returned to the 3 field and assisted the FAA people trying to find 4 out what happened?	5 A. Oh, I know all the rigging procedure and 6 all that had to be done because that's all in our 7 inspection requirements. So the inspector would 8 have had to write off on it.
5 A. Yes, I did.	9 Q. Okay. Just for the folks watching this, 10 when we're say "rigging procedure," what would that 11 involve, generally?
6 Q. And did you speak with the mechanics who 7 had replaced the forward cable?	12 I know you don't have the manual in 13 front of you, but just in general what would a 14 rigging procedure involve?
8 A. No, I didn't speak with them. They were 9 physically and mentally a wreck. I was more 10 comforting them than anything.	15 A. A rigging procedure would involve -- in 16 this particular case we have white boards that we 17 would put up on the aircraft. Certain -- I don't 18 know what they call them -- they're like cover 19 assemblies you put on with degrees and all that.
11 Q. Did you determine at any rate whether or 12 not -- after the installation of the new forward 13 cable whether they had done operations checks?	20 Q. Travel board?
14 A. Again, I had not talked to them. I was 15 just trying to be supportive.	21 A. Yeah. You have your travel board and 22 your rigging pins and whatever else, and you set it
16 Q. In terms of what was Colgan's General 17 Maintenance Manual, once you replaced a forward 18 cable, was an operational check required?	
19 A. I do not know.	
20 Q. The trim tabs are considered a control 21 surface, are they not?	
22 A. Yes, sir.	

Page 101	Page 103
1 up to particular points that the book tells you to 2 set. 3 And then you go to certain operational 4 checks and movements with the controls to verify 5 certain degrees or tolerances or whatever. 6 Q. Something like when the manual trim 7 wheel was at zero, that the trim tabs would be at 8 zero?	1 A. Okay. 2 Q. Is that the chapter in the General 3 Maintenance Manual dealing with inspection policies 4 and procedures? 5 A. Yes, it is. 6 Q. What is an RII policy? 7 A. The RII policy is a designated 8 representative.
9 A. At zero. Correct. They would give you 10 a procedure to make sure that they were at zero. 11 Q. And completion of the rigging checks 12 would have been required by Colgan before the plane 13 was returned to service; correct? 14 A. Be required by the maintenance manual? 15 Q. Yes. 16 A. Yes. 17 Q. But for identifying some documents just 18 to complete our paperwork, why don't we just take a 19 few minutes? Maybe I'm done but for asking him to 20 identify a couple documents. 21 MR. ALMY: I will be happy to take a 22 break.	9 Q. I meant really what does "RII" mean; 10 what does that stand for? 11 A. I don't know. 12 Q. Okay. All right, sir. Let's go to 13 paragraph 5.3.0. 14 A. Uh-huh. 15 Q. Item A, indicating Colgan Air has 16 designated items of maintenance that must be 17 inspected by authorized personnel. These items 18 include at least those that could result in a 19 failure, malfunction or defect endangering the safe 20 operation on the aircraft if not performed properly 21 or if improper parts or materials are used. 22 Are you familiar with that paragraph?
Page 102	Page 104
1 MR. HALL: Okay. 2 VIDEO OPERATOR: We're off the video 3 record at 3:12. 4 (Whereupon, a recess was taken.) 5 VIDEO OPERATOR: We're back on the video 6 record at 3:24. 7 Go ahead, sir. 8 BY MR. HALL: 9 Q. Mr. Sarluca, in Mr. Service's deposition 10 we marked portions of the Colgan Air General 11 Maintenance Manual. 12 Just to give yourself some comfort, that 13 is only part of it. I wanted to show you a part 14 that hadn't apparently been marked and ask you if 15 you could identify it. 16 A. This is the Colgan General Maintenance 17 Manual. This is the changes. 18 (The Colgan GMM excerpt was marked as 19 Exhibit No. 45 for identification.) 20 Q. I show you what is pre-marked as Exhibit 21 45. Look at that. 22 (Witness examining document).	1 A. Yes. 2 Q. All right, sir. Is it correct to say 3 that any maintenance work on a control surface 4 requires an inspection? 5 A. It depends on what the GMM has dubbed as 6 a control surface. I believe we have a list in 7 here of what requires RII's and what does not. 8 Q. Do you know -- this is not a memory test 9 -- just whether or not the maintenance manual 10 required inspection of the replacement of the 11 forward trim tab cables? 12 A. I couldn't tell you. I don't know. 13 MR. HALL: Tom, I only have one copy but 14 it came from Colgan and it's the General 15 Maintenance Manual in its entirety. I'm going to 16 go ahead and have it marked as 46. I just have one 17 question concerning that documentation. 18 (The General Maintenance Manual 19 was marked as Exhibit No. 46 for 20 identification.) 21 BY MR. HALL: 22 Q. I want to show you what I believe is the

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 14

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

CONSOLIDATED UNDER
CASE NO. 05-10155 PBS

YISEL DEAN, Independent Administratrix of the Estate of)
STEVEN DEAN, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
v.)
RAYTHEON COMPANY, a Delaware corporation,) DOCKET NO: 05cv10155
RAYTHEON AIRCRAFT COMPANY, a Kansas) PBS
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air)
Express,)
Defendants.)

LISA A. WEILER, Administratrix of the Estate of SCOTT A.)
KNABE, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
v.) DOCKET NO: 05cv10364
RAYTHEON COMPANY, a Delaware corporation,) PBS
RAYTHEON AIRCRAFT COMPANY, a Kansas)
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air Express,)
Defendants.)

AFFIDAVIT OF WILLARD CROWE

I, Willard Crowe, hereby depose and state:

1. I am a Senior Multidiscipline Engineer II, FAA, for Raytheon Aircraft Company.

I am of legal age and competent to testify. I make this Affidavit based upon personal knowledge and in support of the Raytheon defendants' motion for summary judgment in the above-referenced action. The matters contained in this Affidavit are true and correct.

2. Since 1995, I have worked on the Beech 1900 airplane, primarily in the landing gear and flight controls design.

3. It is my understanding that the Colgan Air mechanics that replaced the actuators on the accident aircraft on August 24, 2003, used part numbers 129-526033-6 and 129-526033-7 which were the parts that Colgan Air had on hand at that time.

4. At that time, Raytheon Aircraft Company Service Bulletin 27-3032 recommended the use of 129-526033-7 (left side) and 129-526033-9 (right side), 129-526033-27 (left side) and 129-526033-29 (right side) or actuators modified by kit 129-5043 for use in this application.

5. Because there is no difference in the force needed to pull on control cables to cause movement of the trim actuators (no differential pull) between the 129-526033-6 and 129-526033-7, the installed pairing of the 129-526033-6 and 129-526033-7, against the recommendations of the IPC, could not have caused the cable damage that Colgan Air reported as the result of the operational check following the replacement of the actuators.

Signed under the pains and penalties of perjury this 27th day of October, 2006.

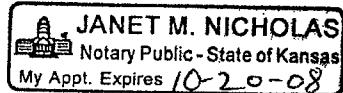
Willard Crowe
Willard Crowe
Senior Multidiscipline Engineer II, FAA
Raytheon Aircraft Company

Subscribed and sworn to before me this 27th day of October, 2006.

Janet M. Nicholas
Notary Public

My Appointment Expires:

10-20-08



Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 15

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

- - - - - x

:

COLGAN AIR, INC., :
:

:

Plaintiff, :
:

:

vs. : Civil Action

: No. 1:05 cv 213

RAYTHEON AIRCRAFT COMPANY, :
:

:

Defendant. :
:

:

- - - - - x

McLean, Virginia

Thursday, June 23, 2005

Videotaped deposition of LARRY RATLIFF, witness,
called for examination by counsel for the defendant,
pursuant to notice, at the offices of Mark A. Dombroff,
Esq., Dombroff & Gilmore, P.C., 1676 International Drive,
Penthouse, McLean, Virginia, before Malynda D. Whiteley, a
Registered Professional Reporter and a notary public in and
for the State of Virginia, beginning at 4:03 p.m., when
were present on behalf of the respective parties:

Page 14	Page 16
<p>1 And I never stayed here -- well, not here -- in 2 Hyannis. I always flew back home on my days off. 3 Q So you got tired of that and wanted to do 4 something that was -- would allow you to have one home? 5 A Yeah, one home, because I didn't see myself 6 making -- benefiting by paying for two houses. And then 7 during the winter I started losing money because the 8 weather (sic) bad, you get stuck, then you have to pay out 9 your own pocket to rent a car to get to work that night. 10 Q Do you remember having performed mechanic work on 11 Tail No. 240, the accident aircraft, during the month that 12 it crashed? 13 A Yes. 14 Q Just generally -- and we'll talk about the 15 specifics as we get more to it. But just generally what 16 was your role in that work? 17 A Generally I -- I put (sic) actuator in on the 18 port side or the right side and did ransom (phonetic) 19 tests. 20 The cable jammed up. Then we found out that the 21 actuator wasn't the right one that -- we -- we found out we 22 couldn't use that one.</p>	<p>1 A Uh-huh. 2 Q And were you working alone or with someone else? 3 A I was working with another mechanic, a new guy. 4 I can't remember his name. 5 Q Scott Gebauer? 6 A I think that's his name. 7 Q So you were the senior guy, he was the new guy -- 8 A Yes. 9 Q -- on this task? 10 A Yes. 11 Q And you had been there by this point in time a 12 little less than a year? 13 A Yes. 14 Q And what was your title at the time? 15 A Mechanic. 16 Q You weren't a lead? 17 A No. 18 Q Had you been a help- -- a mechanics' helper at 19 some point early on, or were you a mechanic right away? 20 A I was a mechanic right away. I had my A and P 21 license so -- 22 Q Were you involved at all in the process of -- of</p>
Page 15	Page 17
<p>1 Q So were you involved in the free play check that 2 determined that the actuator needed to be changed? 3 A No. 4 Q That was done by someone else? 5 A I can't remember. I don't even know if I was 6 involved in -- we all did the inspection, and I don't 7 remember what part I did. I -- we did part of it one day, 8 and then it went out and came back in, and we did the other 9 part the next day. 10 Q And we're talking about a -- a Detail Six 11 inspection; is that right? 12 A Yes. 13 Q And what part of the plane does that inspect? 14 A That's pretty much the whole plane. 15 Q The whole plane? 16 A Just about. You do different sections. 17 Q And what things do you remember checking on? 18 A I can't remember; that was two years ago. 19 Q Once the trim tabs were found to fail the free 20 play check, were you then given the task of replacing -- 21 A Yes. 22 Q -- one of them?</p>	<p>1 obtaining the part, the actuator itself, to put on? 2 A I'm not understanding the words you're asking me. 3 Q Well, when you're -- when you find out that 4 the -- the actuator fails the free play test, you've got to 5 replace the actuator -- 6 A Right. 7 Q -- right? 8 So you've got to obtain a new replacement 9 actuator? 10 A No, I wasn't involved. 11 Q Someone else did that? 12 A Right; a supervisor. 13 Q So by the time you were tasked with actually 14 changing it, you already had a part in hand? 15 A Right. 16 Q When you replace an actuator like that, what do 17 you do in terms of going to get a checklist or 18 documentation -- 19 A I -- 20 Q -- to do the job? 21 A Basically you go to the computer, print out what 22 you need, bring it and set it on your toolbox, get all your</p>

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 16

Colgan Air v. Raytheon

Condenselt™

Miguel Rodriguez

Page 1

1 IN THE UNITED STATES DISTRICT COURT
 2 FOR THE EASTERN DISTRICT OF VIRGINIA
 3 ALEXANDRIA DIVISION
 4 - - - - - x
 5 COLGAN AIR, INC., :
 6 Plaintiff, :
 7 :
 8 VS. : Civil Action
 9 : No. 1:05cv213
 10 RAYTHEON AIRCRAFT COMPANY, :
 11 :
 12 Defendant. :
 13 - - - - - x

Page 3

1 I-N-D-E-X
 2
 3 EXAMINATION BY COUNSEL FOR
 4 WITNESS DEFENDANT,
 5 Miguel Rodriguez MR. HALL:
 6
 7
 8

9 McLean, Virginia
 10 Tuesday, July 12, 2005
 11
 12
 13
 14 Videotaped deposition of MIGUEL RODRIGUEZ,
 15 a witness, called for examination by counsel
 16 for defendant, pursuant to notice, at the
 17 offices of Dombroff & Gilmore, 1676
 18 International Drive, Penthouse, McLean,
 19 Virginia 22101, before Sandria L. Cox, a
 20 notary public in and for the Commonwealth of
 21 Virginia, beginning at 1:10 p.m., when were
 22 present on behalf of the respective parties:

Page 2

1 APPEARANCES:
 2
 3 FOR THE PLAINTIFF:
 4 THOMAS B. ALMY, ESQ., MARK A. DOMBROFF,
 5 Dombroff & Gilmore, 1676 International
 Drive, Penthouse, McLean, Virginia
 22101.
 6
 7 FOR THE DEFENDANT:
 8 ROBERT T. HALL, ESQ., Hall, Sickels, Frei
 9 & Kattenburg, P.C., 12120 Sunset Hills
 Road, Suite 150, Reston, Virginia
 20190-3231.
 10
 11 MICHAEL JONES, ESQ., Martin, Pringle,
 12 Oliver, Wallace & Bauer, L.L.P., 100
 North Broadway, Suite 500, Wichita,
 Kansas 67202.

Page 4

1 P-R-O-C-E-E-D-I-N-G-S
 2 VIDEO OPERATOR: May it please the Court,
 3 ladies and gentlemen of the jury, my name is
 4 William Sale. I'm the video operator and
 5 producer. My business address is 3444 Fairfax
 6 Drive in Arlington, Virginia; area code
 7 703-527-5100.
 8 Today is Thursday, July 14, 2005.
 9 The time 1:23 p.m. We're about to take the
 10 third in a series of depositions involving
 11 Colgan Air, Inc., plaintiff, versus Raytheon
 12 Aircraft Company, defendant.
 13 This is the deposition of Miguel
 14 Rodriguez.
 15 At this time would counsel please
 16 introduce themselves.
 17 MR. HALL: Mr. Rodriguez, my name is
 18 Robert Hall. I'm here on behalf of Raytheon
 19 Aircraft. On the telephone is Mr. Jones.
 20 MR. DOMBROFF: Mark Dombroff for
 21 Colgan Air.
 22 VIDEO OPERATOR: Would the court

Colgan Air v. Raytheon

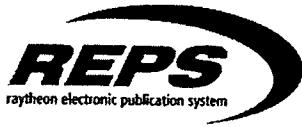
CondenseIt™

Miguel Rodriguez

Page 37	Page 39
<p>1 Dombroff coming into room.)</p> <p>2 Q. Were you consulted by Mr. Sarluca</p> <p>3 about the decision to install -- I think the</p> <p>4 record will reflect he installed a -7 and a -6</p> <p>5 actuator in the tail section of the UE-40?</p> <p>6 A. No.</p> <p>7 Q. Is that a decision that essentially</p> <p>8 you left to him and in conjunction with his</p> <p>9 conversations with Raytheon technical</p> <p>10 assistance?</p> <p>11 A. Yes. As a supervisor he had the</p> <p>12 leeway to run the operation in the evenings as</p> <p>13 his mandate.</p> <p>14 Q. So in terms of is there any anything</p> <p>15 in Colgan policy manuals, the General</p> <p>16 Maintenance Manual or any other policy manual</p> <p>17 of which you're aware, that specifically gives</p> <p>18 the maintenance supervisor Mr. Sarluca the</p> <p>19 authority to substitute actuators for those</p> <p>20 that are listed in the parts catalog?</p> <p>21 A. He doesn't have the authority to</p> <p>22 deviate from the manual, if that's the question</p>	<p>1 numbers of that specific component and then all</p> <p>2 the way to the right-hand-side of opposite page</p> <p>3 you will have what is called usable on-code and</p> <p>4 that code will you tell what serial number</p> <p>5 range might fit.</p> <p>6 Along the lines of that you might</p> <p>7 have one single code or several codes for a</p> <p>8 specific dash number.</p> <p>9 When you go that specific dash</p> <p>10 number on the manual, it will tell you spares</p> <p>11 replacement alternate number will be this or</p> <p>12 superseded part number.</p> <p>13 So you go from line item to line</p> <p>14 item, as it keeps going superceded.</p> <p>15 So it's a little more complicated</p> <p>16 than just a single list of parts that fit in a</p> <p>17 specific airplane.</p> <p>18 Q. All right, sir. I think the record</p> <p>19 will reflect that -6 and -7 actuators were</p> <p>20 installed and then the cable bound up in some</p> <p>21 fashion or came off the drum.</p> <p>22 A. Correct.</p>
<p>1 you're asking.</p> <p>2 If there is confusion as to which</p> <p>3 one of the ones listed are required to be on</p> <p>4 that specific serial number, he then proceeded</p> <p>5 to do the next best thing, which is contact</p> <p>6 technical services.</p> <p>7 Q. I want to draw an analogy here; it</p> <p>8 may not be very tight. But when I go down to</p> <p>9 buy a cartridge for my computer printer and go</p> <p>10 into the store, there will be a print cartridge</p> <p>11 that says it is compatible with the following</p> <p>12 printers.</p> <p>13 Do I understand that the parts</p> <p>14 catalog has got -- if you are a Beech</p> <p>15 1900-Delta, serial number U-1 to U-55, let's</p> <p>16 say, here are the appropriate part numbers for</p> <p>17 the actuators, and there might be several?</p> <p>18 A. That's kind of a simply analogy but</p> <p>19 you are on the right track.</p> <p>20 In other words, on the manual, the</p> <p>21 IPC will list you the component that you're</p> <p>22 looking for and it will list you several part</p>	<p>1 Q. And then one of the actuators was</p> <p>2 replaced.</p> <p>3 A. I believe the right-hand actuator</p> <p>4 was replaced a second time.</p> <p>5 Q. I think the record reflects that the</p> <p>6 -7 actuator was put on the left-hand-side of</p> <p>7 the aircraft and -6 on the right, and the -6</p> <p>8 was subsequently removed and replaced with a</p> <p>9 -9. Is that your understanding?</p> <p>10 A. I don't recall, but I think you're</p> <p>11 on the right track.</p> <p>12 Q. All right, sir. Now, in terms of</p> <p>13 the Colgan policies and procedures, if Mr.</p> <p>14 Sarluca has looked in inventory and has a -7</p> <p>15 and a -6 in inventory but he's gone to the</p> <p>16 Raytheon parts catalog and it didn't say in the</p> <p>17 parts catalog that a -7 may be used with a -6</p> <p>18 for Uniform Echo 40, what is the procedure he's</p> <p>19 supposed to follow from that point on?</p> <p>20 A. If he would have done an inventory</p> <p>21 of the stock and saw in the IPC that a specific</p> <p>22 part number that he was required to have was</p>
	Page 40

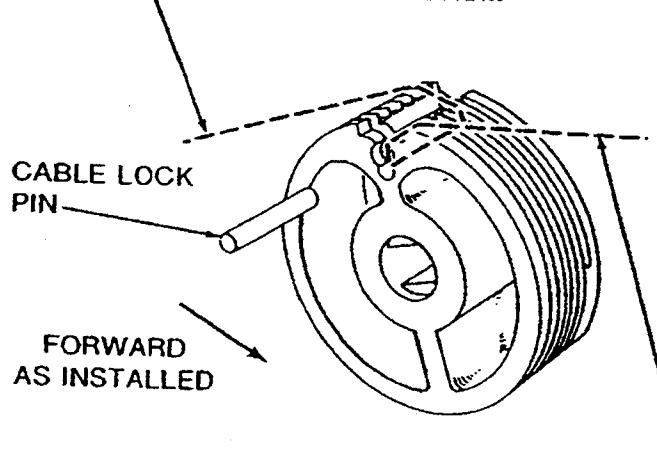
Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 17



Beech 1900D Airliner Maintenance Manual (UE-1 and After)
Elevator Tab Cables - Maintenance Practices

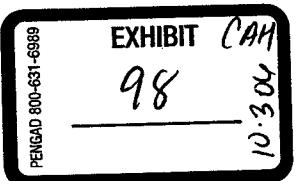
RIGHT HAND THREADS CABLE FROM THE PEDESTAL TAB CONTROL DRUM TO THE LEFT HAND THREADS CABLE OF THE ACTUATOR DRUM



LEFT HAND THREADS CABLE FROM THE PEDESTAL TAB CONTROL DRUM TO THE RIGHT HAND THREADS CABLE OF THE ACTUATOR DRUM

Elevator Tab Control Cable Winding

C9101033

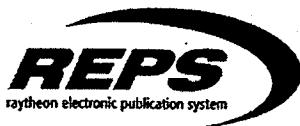


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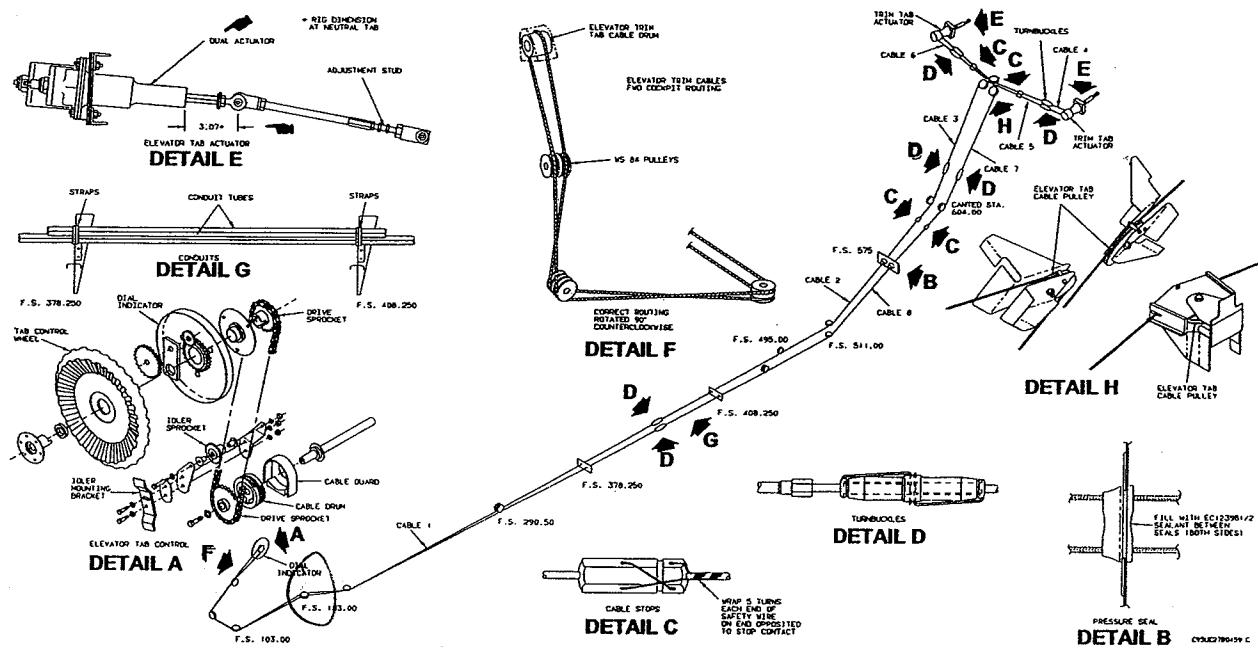
Figure 201

Printed from REPS Airliner Revision 9 - May 2003
(P/N 129-590000-15 Revision A30 October 26 2002)

Page 1



Beech 1900D Airliner Maintenance Manual (UE-1 and After)
Elevator Tab Cables - Maintenance Practices



Elevator Trim Tab Control System



Beech 1900D Airliner Maintenance Manual (UE-1 and After)

Elevator Tab Cables - Maintenance Practices

ELEVATOR TAB CABLES - MAINTENANCE PRACTICES

ELEVATOR TRIM TAB CABLE REMOVAL

- a. Remove all flight compartment seats (25-10-00) and all left passenger seats (25-20-00).
- b. Remove the flight compartment carpet (25-10-01) and floorboards (6-50-00), the belly access plate below the pedestal (121DBC, 6-50-00), all left passenger compartment carpets (25-20-01) and floorboards (6-50-00), and all access plates on top of the horizontal stabilizer (6-50-00).
- c. Remove the cable retaining pins, fairleads and pressure seals. Refer to Figure 202.

NOTE: Some of the pulleys cannot be cleared by the stops and turnbuckles even with retaining pins removed. Remove those pulleys where necessary to provide for adequate clearance.

- d. Remove the straps securing the conduit tubes both forward and aft of the brackets.
- e. Slide the conduit tubes forward or aft as required to gain access to the turnbuckles.
- f. Separate the forward cables from the aft cables at the turnbuckles.
- g. Attach lead lines to the aft ends of the forward cables and properly identify them to facilitate reinstallation.
- h. In the crew compartment, remove the front and both side access panels from the pedestal.
- i. Tape the two cables together just below the cable drum to prevent backlash from the drum.

CAUTION: IF THE FA2100 FLIGHT DATA RECORDER IS INSTALLED ON THIS AIRCRAFT, PERFORM THE PITCH TRIM CONTROL POTENTIOMETER (SENSOR) REMOVAL PROCEDURE. REFER TO CHAPTER 31-31-23 IN THE BEECH 1900D AIRLINER FLIGHT DATA RECORDER (FA2100) MAINTENANCE MANUAL SUPPLEMENT, P/N 129-590000-109.

- j. On the left side of the pedestal, loosen the two bolts in the idler sprocket bracket to relieve tension from the elevator tab chain in the pedestal.

- k. Cut and remove the safety wire from the two bolts on each end of the elevator tab drum shaft in the lower forward pedestal.

- l. Remove the two bolts, lift the shaft assembly slightly to remove the chain from the sprocket and remove the shaft assembly from the pedestal with the cable attached.

NOTE: The point where the cable is secured by the pin can be marked with a drop of paint or a piece of tape. If the cable is to be replaced with a new one, measure the new cable against the old one and mark it also. Make certain the dimensions for the tab up and tab down are the same for the new cable as on the old cable.

- m. Withdraw the cable from the airplane, drawing the lead lines through the pedestal.

- n. Identify and attach lead lines to the aft cables in the aft fuselage section.



Beech 1900D Airliner Maintenance Manual (UE-1 and After)

Elevator Tab Cables - Maintenance Practices

o. Working through the access openings in the top of the horizontal stabilizer, separate both cables at the turnbuckles and withdraw the cable with the lead line attached. (The other cable is still connected to the opposite tab actuator through a turnbuckle.)

NOTE: While working with the cables that are strung up through the vertical stabilizer, take precautions to avoid losing the ends of the cables down into the interior of the vertical stabilizer since recovery is difficult.

p. Attach and identify a lead line to the remaining cable that runs inboard from the turnbuckle.

q. Working up through the access openings on top of the horizontal stabilizer, disconnect the turnbuckle of the crossover cable (which has a lead line attached at the left horizontal stabilizer) and remove the cable from the airplane.

r. Disconnect the remaining cable at the turnbuckle and withdraw the remaining aft cable from the aft fuselage section.

ELEVATOR TRIM TAB CABLE INSTALLATION

NOTE: If a used cable is being installed, the cable should be dipped in corrosion preventive compound (4, Chart 2, 27-00-00). Excess should be removed by wiping with a clean cloth.

a. Position the cable in the slot in the cable drum (use the mark as indicated in ELEVATOR TRIM TAB CABLE REMOVAL) and install the cable lock pin. Refer to Figure 201.

b. The cable must be installed as shown in the illustration. From the pin, wrap each cable 2-1/4 turns around the drum and tape the two cables together to prevent backlash from the drum.

c. Set the tab indicator at 0. Refer to Figure 202.

d. Assemble the cable guard over the drum, install the sprocket on the shaft and carefully position the shaft assembly in the pedestal, installing the lower end of the chain over the sprocket.

e. Install and safety wire the two bolts in the ends of the shaft assembly on each side of the pedestal.

f. Adjust the idler sprocket in the pedestal to remove slack from the tab control chain and tighten the two bolts in the idler sprocket bracket on the left side of the pedestal.

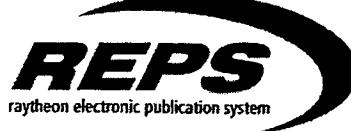
g. After identifying the cable ends, attach the proper lead lines to the cables and pull them back through to the aft fuselage opening. Install the conduit tubes over the cables, but do not install the straps around the tubes at this time. Secure the cable ends to the structure with tape to prevent movement while the remainder of the cables are being strung.

h. Reinstall the pulleys that were removed for routing and reinstall the cable retaining pins.

i. Working through the access openings on the top of the horizontal stabilizer, attach the LH aft cable to the lead line and pull the cable through the vertical stabilizer to the aft fuselage area. Secure the end of the cable at the stabilizer with tape.

NOTE: While working with the cables that are strung up through the vertical stabilizer, take precautions to avoid losing the ends of the cables down into the interior of the vertical stabilizer since recovery is difficult.

j. Attach the crossover cable to the lead line at the opening in the top of the left horizontal stabilizer and pull the cable through



Beech 1900D Airliner Maintenance Manual (UE-1 and After)

Elevator Tab Cables - Maintenance Practices

to the right horizontal stabilizer. Secure both ends of the cable with tape.

k. Attach the RH aft cable to the lead line in the aft fuselage area and pull the cable up through the access opening in the top of the horizontal stabilizer. Secure the cable with tape.

l. Identify and reconnect the turnbuckles in the right stabilizer access opening.

NOTE: The interior of all turnbuckles should be coated or filled with grease (1, Chart 2, 27-00-00) for corrosion protection. Check for proper installation before safetying the turnbuckles.

m. Identify and reconnect the turnbuckles in the left horizontal stabilizer access opening.

n. Identify and reconnect the turnbuckles in the aft fuselage area.

o. Using solvent (2, Chart 2, 27-00-00), clean the cables for the length of travel through the pressure seals in the aft fuselage. Lubricate to one inch beyond the cleaned area with grease (1, Chart 2, 27-00-00).

p. Remove the tape from the cables below the cable drum in the pedestal.

q. Fill the pressure seals with grease (1, Chart 2, 27-00-00) and install them.

r. Reinstall the cable retaining pins and fairleads.

s. Seal the rubber seals to the metal with sealer (3, Chart 2, 27-00-00).

u. Rig the cables to the proper tension as indicated in Figure 201, Chapter 27-30-05 and safety all turnbuckles.

v. If necessary, adjust the indicator in the flight compartment to 0 while the tabs are neutral to the elevator.

w. Install straps on the conduit tubes both forward and aft of the brackets.

NOTE: If the FA2100 Flight Data Recorder is installed on this aircraft, perform the PITCH TRIM CONTROL POTENTIOMETER (SENSOR) INSTALLATION procedure. Refer to Chapter 31-31-23 in the BEECH 1900D AIRLINER FLIGHT DATA RECORDER (FA2100) MAINTENANCE MANUAL SUPPLEMENT, P/N 129-590000-109.

x. Replace all access panels, floor coverings and seats.

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 18

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 FACTUAL REPORT AVIATION	NTSB ID: NYC03MA183	Aircraft Registration Number: N240CJ
	Occurrence Date: 08/26/2003	Most Critical Injury: Fatal
	Occurrence Type: Accident	Investigated By: NTSB

Location/Time

Nearest City/Place Yarmouth	State MA	Zip Code 02675	Local Time 1540	Time Zone EDT	
Airport Proximity: Off Airport/Airstrip	Distance From Landing Facility: 4			Direction From Airport: 180	

Aircraft Information Summary

Aircraft Manufacturer Beech	Model/Series 1900D	Type of Aircraft Airplane
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Sightseeing Flight: No Air Medical Transport Flight: No

Narrative

Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:

HISTORY OF FLIGHT

On August 26, 2003, at 1540 eastern daylight time, a Beech 1900D, N240CJ, operated by Colgan Air Inc. as flight 9446 (d.b.a. US Airways Express), was destroyed when it impacted water near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts; destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan was filed for the repositioning flight conducted under 14 CFR Part 91.

According to data from Federal Aviation Administration (FAA) air traffic control (ATC), the flight departed runway 24 at Hyannis about 1538. Shortly after takeoff, the flightcrew declared an emergency and reported a "runaway trim." The airplane flew a left turn and reached an altitude of approximately 1,100 feet. The flightcrew subsequently requested to land on runway 33, and the air traffic control tower (ATCT) controller cleared the flight to land on any runway. No further transmissions were received from the flightcrew.

Witnesses observed the airplane in a left turn, with a nose-up attitude. The airplane then pitched nose-down, and impacted the water "nose first."

According to the cockpit voice recorder (CVR), the flightcrew completed the Before Start checklist between 1523 and 1530; however, there was no record of the First Flight Of The Day checklist being completed after engine start.

At 1523:30, the captain called for the Before Start checklist.

At 1523:43, the first officer stated, "preflight's complete. cockpit scan complete." The captain replied, "complete."

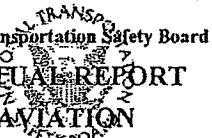
At 1523:58, the first officer stated, "maintenance log, release, checked the aircraft." The captain replied, "uhhhh. maintenance and release on aircraft. The captain subsequently identified that the DFDR was inoperative, and confirmed that the minimum equipment list (MEL) was still open.

At 1525:11, the captain began to start the right engine, before being interrupted. Approximately 1 minute later, after a conversation with maintenance personnel over the radio, the captain resumed the starting of the right engine.

At 1529:29, as the captain was starting the left engine, the flightcrew began non-pertinent conversation, which lasted about 30 seconds.

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	Occurrence Type: Accident

Narrative (Continued)

At 1530:04, the captain called for the After Start checklist. After completing the After Start checklist items, the first officer announced the checklist "complete."

At 1530:21, the captain continued the previous non-pertinent conversation, followed 10 seconds later with, "all right we're ready to taxi with HOTEL."

At 1530:50, the flightcrew began a conversation about the flight plan to ALB, taxiing the airplane, and which pilot would fly the airplane. The conversation lasted for about 4 minutes.

At 1535:14, during the Taxi checklist, the first officer stated, "...three trims are set." The first officer then called the Taxi checklist "complete."

At 1535:26, the flight crew began a non-pertinent discussion about a landing airplane. The discussion lasted about 1 minute and 27 seconds.

At 1537:00, the airplane was holding short of runway 24.

At 1537:17, the captain stated, "all right. forty six is ready." The flightcrew then began to announce several items, which were identified as being on the Before Takeoff checklist; however, the checklist was not called for.

At 1538:07, the controller cleared Colgan flight 9446 for takeoff on runway 24.

At 1538:08, the flightcrew initiated a takeoff on runway 24.

At 1538:40, the first officer stated "V1...rotate."

At 1538:46, the captain stated, "...we got a hot trim..." At that time, according to the digital flight data recorder (DFDR), the elevator trim moved from approximately -1.5 degrees (nose down) to -3 degrees at a speed consistent with the electric trim motor.

At 1538:48, the captain stated, "kill the trim kill the trim kill the trim."

At 1538:50, the captain stated, "roll back...roll back roll back roll back roll back." According to the DFDR, the elevator trim then moved from approximately -3 degrees to -7 degrees at a speed greater than the capacity of the electric trim motor.

At 1538:56, the captain stated, "roll it back roll my trim..."

At 1539:00, the captain stated, "do the electric trim disconnect..."

At 1539:04, the captain instructed the first officer to, "go on the controls" with him.

At 1539:14, the captain instructed the first officer to retract the landing gear.

At 1539:18, the captain instructed the first officer to retract the flaps. The first officer responded that they were "up."

At 1539:21, the captain declared an emergency regarding a runaway trim and requested to return to the airport. The controller acknowledged the emergency and offered the option of the left or right downwind for runway 24.

At 1539:33, the captain instructed the first officer to reduce the engine power.

From 1539:49 to 1540:03, the captain instructed the first officer to "pull the breaker." The first

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Narrative (Continued)

officer queried the captain as to its location.

At 1540:30, the captain requested to land on runway 33. The controller acknowledged the transmission and cleared the flight to land on runway 33.

The recording ended at 1540:47.

The accident occurred during the hours of daylight; located approximately 41 degrees, 37 minutes north longitude, and 70 degrees, 15 minutes west latitude.

PERSONNEL INFORMATION
Captain

The captain held an airline transport pilot certificate, with a rating for airplane multiengine land, and was type rated in the Beech 1900D. His most recent FAA first class medical certificate was issued on March 18, 2003. The captain was hired by Colgan Air on July 16, 2001, and initially flew as a first officer on the Beech 1900D. He received a Beech 1900D type rating on January 8, 2003. The captain's most recent proficiency check was completed on June 5, 2003. The captain had accumulated a total flight time of 2,891 hours; of which, 451 hours were as pilot in command of a Beech 1900D, and 913 hours were as second in command of a Beech 1900D.

First Officer

The first officer held a commercial pilot certificate with ratings for airplane single engine land, airplane multiengine land, and instrument airplane. His most recent FAA first class medical certificate was issued on August 22, 2003. The first officer was hired by Colgan Air on October 22, 2002, and assigned to the Beech 1900D. His most recent proficiency check was completed on November 3, 2002. The first officer had accumulated a total flight time of 2,489 hours; of which, 689 hours were in a Beech 1900D.

Quality Assurance Inspector

The quality assurance inspector received an airframe and powerplant certificate in 1986. He worked for several companies within the aviation industry and was hired by Colgan Air in June, 2002. The quality assurance inspector had no prior experience on the Beech 1900 before his employment at Colgan Air. He received 40 hours of formal training for the Beech 1900, and on the job (OJT) training as well.

Lead Maintenance Technician

The lead maintenance technician that replaced the elevator trim tab cable received his airframe and powerplant certificate in September, 2001. He was hired by Colgan Air on October 2, 2001. He received approximately 94.5 hours of formal training on the Beech 1900, and OJT. The lead maintenance technician had previously replaced a forward elevator trim tab cable on a Beech 1900C with a former employer.

Lead Maintenance Technician

The second lead maintenance technician that assisted in replacing the elevator trim tab cable received his airframe and powerplant certificate in September, 2001. He was hired by Colgan Air on October 2, 2001. He received approximately 72 hours of formal training on the Beech 1900, and OJT.

AIRCRAFT INFORMATION
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Narrative (Continued)

The airplane was manufactured in 1993, and equipped with two Pratt & Whitney PT6A engines. On January 3, 2003, Colgan Air leased the airplane from Raytheon Aircraft Credit Corporation, and it entered service on January 4, 2003.

At the time of the accident, the airplane had accumulated 16,503.5 hours of operation; of which, 1,219.1 hours were generated by Colgan Air. The airplane had accumulated a total of 24,637 cycles; of which, 1,765 cycles were generated by Colgan Air. The left engine had accumulated 15,245 total hours of operation, and 3,120 hours since the last overhaul. The right engine had accumulated 16,180 total hours of operation, and 3,120 hours since the last overhaul.

The accident flight was the first flight after maintenance had been performed on the airplane, which included replacement of the forward elevator pitch trim tab cable.

METEOROLOGICAL INFORMATION

At 1556, the reported weather at HYA was: winds variable at 6 knots; visibility 10 miles; sky clear; temperature 78 degrees Fahrenheit; dew point 68 degrees Fahrenheit; altimeter 29.86 inches of mercury.

FLIGHT RECORDERS

Cockpit Voice Recorder

The airplane was equipped with a Fairchild model A-100A CVR. The CVR was transported to the NTSB, Office of Research and Engineering, on August 27, 2003. A CVR group convened on August 28, 2003, and a transcript was prepared of 17 minutes 17 seconds of the approximate 34-minute recording. Recordings prior to the flightcrew entering the cockpit were not transcribed.

According to the CVR Group Chairman's report, the exterior of the CVR showed evidence of structural damage. The interior of the recorder and the tape were found intact and in good condition. The recording consisted of four channels of "poor to good" quality audio information.

Flight Data Recorder

The airplane was equipped with a L3COM (Fairchild) Model F1000 (S/N 00505) DFDR. The DFDR was transported to the NTSB Office of Research and Engineering on August 27, 2003. A DFDR readout was then performed.

The DFDR recorded data in a digital format using solid-state Flash Memory as the recording medium. Although the recorder was damaged by impact forces, the memory module was not damaged. The timing of the DFDR data was correlated to air traffic control and CVR timing.

A total of 96.7 hours of data on the DFDR was referenced to compare previous flights to the accident flight. As a result of the recent maintenance performed on the airplane, the pitch trim values and elevator position values for the DFDR were out of calibration, and the DFDR was noted as inoperative on the maintenance records. However, the DFDR recorded data for the accident flight. Although the exact pitch trim and elevator position values were not known, the data provided trend information.

There was no DFDR data recovered that indicated an operational check of the elevator trim system was performed after maintenance. However, the DFDR required 115 volts of AC current to operate. The electric trim system could operate using the 28-volt DC bus, without having the 115-volt AC bus powered.

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Narrative (Continued)

The DFDR values recorded for the pitch trim control position, at the beginning of the flight, were approximately 2 degrees negative. Shortly after takeoff, the pitch trim control values changed to approximately 3 degrees negative, where they remained for a period of about 10 seconds. The pitch trim control values then moved to approximately 7 degrees negative, where they remained for the duration of the flight. The data also revealed that after takeoff, the airspeed continued to increase to approximately 210 knots, and then to 250 knots during the descent.

The digital flight data recorded (DFDR) indicated that shortly after declaring an emergency, the airplane began a left turn while climbing to 1,100 feet. Engine torque was reduced, and the airplane remained at 1,100 feet while maintaining an airspeed of approximately 207 knots and 30 degrees of left bank for 15 seconds. The airplane then pitched down to 8 degrees negative (nose down) and the airspeed increased to 218 knots. The airplane rolled right and left due to control inputs, and the pitch attitude decreased to 30 degrees negative.

AIRCRAFT PERFORMANCE

A performance study was completed to evaluate radar and DFDR data. For the purpose of the study, the un-calibrated DFDR values were corrected to known values during ground operations, and assumed values during the accident flight.

Specifically, the elevator pitch trim was shifted 2.07 degrees nose-up based on a maximum nose down value of approximately -5 degrees, rather than -7 degrees.

The performance study was completed in conjunction with a DFDR study. They revealed that during the takeoff roll, the elevator did not leave the trailing edge down stop as soon, and did not move in the trailing edge up direction as rapidly, as during previous takeoffs. A kinematics extraction revealed that approximately 60 pounds of control column pull force was required immediately after rotation, which was greater than previous flights.

Once airborne, the airplane performance was consistent with the elevator pitch trim moving to the full nose down position. The airplane climbed to approximately 1,100 feet msl, before descending into the water. As the airspeed exceeded 200 knots during the flight, and approached 250 knots during the descent, the control column forces increased to approximately 250 pounds.

WRECKAGE INFORMATION

The investigative team arrived near the accident scene on August 26 and 27, 2003. The airplane came to rest in approximately 18 feet of water, about 300 feet from the Yarmouth shore. The majority of the wreckage, including both engines, was recovered on August 28. The team examined wreckage, operational records, maintenance records, and DFDR data on-scene from August 27 through August 31.

The left engine exhibited impact and salt-water immersion damage. The engine was recovered stripped of the cowling, right engine mount, and right exhaust stub. The shroud and guide vane inner and outer drums were circumferentially scored at the second stage power turbine. The first stage compressor blades were bent forward and opposite the direction of rotation, and the shroud exhibited circumferential scoring.

The right engine exhibited impact and salt-water immersion damage. The engine was recovered with some portions of the cowling attached. The shroud and guide vane inner and outer drums were circumferentially scored at the second stage power turbine. The first stage compressor blades were bent forward and opposite the direction of rotation, and the shroud exhibited circumferential scoring.

Portions of both wings, the cockpit, and fuselage were recovered, and exhibited impact damage. The

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empennage was recovered partially intact. Approximately all of the right elevator was recovered, except for the outboard edge. The inboard portion of the right elevator remained attached to the horizontal stabilizer at the two inboard hinge locations. About 5 feet of the left elevator was recovered, and attached at one inboard hinge. Both elevator balance weights were recovered. An approximate 7-foot section of left horizontal stabilizer was found intact, and an approximate 5-foot section of right stabilizer spar was visible. The rudder remained attached to the vertical stabilizer.

The right and left elevator trim tabs were found attached to the elevator. The right and left elevator trim actuators were found near the full nose-down elevator trim position. The electric elevator trim servo was found attached to the base of the horizontal stabilizer. The left and right trim tab cables remained wrapped around their respective trim actuator drums. Elevator trim continuity was confirmed from the elevator trim tabs to the cargo door area. Due to fragmentation forward of the cargo door area, trim cable continuity could not be confirmed from the elevator to the cockpit pedestal. However, the cockpit pedestal with elevator trim drum and manual trim wheel was recovered. Further examination of the manual trim wheel revealed that it was found near the 6.5 units of nose-up trim position.

MAINTENANCE

Colgan Air employed its own maintenance technicians that performed all of the necessary scheduled and phase maintenance on its fleet. The fleet was maintained under a continuous airworthiness maintenance program (CAMP), which was developed by Colgan Air and approved by the FAA. The CAMP was a series of checks and inspections, which incorporated guidance from the Beech 1900D airliner maintenance manual (AMM). The various inspections included in the CAMP were: Preflight Inspections, Routine Inspections, Detail Inspections, and Structural Inspections. The Preflight Inspections were due every 4 flight-days, and the Routine Inspections were due every 8 flight-days. The Detail Inspections were divided into six phases, and each phase was performed every 220 flight-hours, which resulted in a completed Detail Inspection after every 1,320 flight hours. The Structural Inspections were set forth by the manufacturer.

Each Detail Inspection focused specifically on a certain part of the airplane. They were: Wings, Powerplant and Nacelles, Flight Compartment/Cabin, Environmental Systems, Landing Gear, and Aft Fuselage/Emppennage.

On August 23, 2003, the accident airplane underwent a Detail Six phase check (Aft Fuselage/Emppennage). The phase check was interrupted, and the remaining work was deferred on the morning of August 24, per the general maintenance manual (GMM). Ten revenue flight legs were completed that day, and the Detail Six phase check resumed on the evening of August 24, and concluded on August 26.

A maintenance technician conducted a free play check of the left and right elevator trim actuators as part of the Detail Six phase check. Both actuators failed the check, and the failure required replacement of the actuators. During the replacement of the actuators, the technician did not remove the elevators as required by the CAMP and AMM. Additionally, the technician did not maintain pressure on (block) the elevator trim tab cables, nor did the AMM require that the cables be blocked. Subsequently, the cable unwound off the forward drum. On August 25, during the operational check of the system, the forward elevator trim tab cable "fell off" the forward drum, seized, and kinked.

A new forward elevator trim tab cable was ordered. Due to an incorrect right elevator trim actuator part number, a new right elevator trim actuator was also ordered. That evening, two lead maintenance technicians replaced the forward elevator trim tab cable, and two other maintenance technicians replaced the right elevator trim actuator. The forward elevator trim tab cable drum had already been removed by personnel on the dayshift, but no turnover notes were forwarded. The

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Narrative (Continued)

AMM and Colgan Air policies did not require turnover notes from one shift to another.

The two lead maintenance technicians that replaced the forward elevator trim tab cable did not use a lead wire as instructed by the AMM. They marked the topmost cable pulleys with a "T" instead. A lead maintenance technician and the quality assurance inspector stated that following the maintenance, a successful operational check of the system was completed. They added that the operational check included running the manual and electric elevator trim several times, with the quality assurance inspector at the cockpit and tailbone during different phases of the operational check.

The two lead maintenance technicians that installed the new cable stated that they referred to the AMM, and were not confused handling the drum or interpreting the drum illustration.

The airplane was returned to service on August 26.

Review of the Beech AMM Chapter 27-30-04, "Elevator Trim Tab Cables - Maintenance Practices," revealed that the trim drum was depicted backwards. Although the drum could not be installed backwards, it was possible to mis-route the cable around the drum, and reverse the trim system. The depiction in the maintenance manual showed the nose-up trim tab cable emanating from the aft end of the drum, rather than the forward end. It also showed the nose-down cable emanating from the forward end of the drum, rather than the aft. However, the "FORWARD AS INSTALLED" arrow included in the depiction would have to be ignored, and the cables would have to be crossed once along the cable run, to reverse the system and secure the cable ends into the turnbuckles.

Further review of the Beech AMM revealed that there was no procedure for an operational check contained in Chapter 27-30-04. Nor was there a referral to Chapter 27-30-09, "Elevator Trim - Maintenance Practices...Elevator Trim Operational Check;" which did contain a procedure for an operational check of the elevator trim system.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilots by The Commonwealth of Massachusetts, Department of Health, Office of the Chief Medical Examiner, Boston, Massachusetts.

Toxicological testing was conducted on the pilots at the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

TESTS AND RESEARCH

Elevator Trim System

The cockpit controls consisted of a manual trim wheel, and two switches on each yoke, which activated an electric elevator trim motor. When moved in the nose up direction, and using "0" as a point of origin, the manual wheel was indexed "0, AFT, 3, FWD, 6, -, UP, -, -, 10, -, UP," and terminated at a white box. When moved in the nose down direction, using "0" as a point of origin, the manual wheel was indexed "0, -, DN, -, 3," and terminated at a white box. The trim wheel connected to a sprocket, driving a chain to a second sprocket, connected to the elevator trim cable drum. The sprockets, chain, and trim drum were located inside the cockpit pedestal. One side of the drum had a slotted side or key way, which connected to the sprocket, and prevented the drum from being installed backwards. The approximate 55-foot long forward elevator trim cable was wrapped around the drum and secured with a cable lock pin.

According to a representative from Raytheon Aircraft, the electric trim system could be disconnected in any of four ways: depressing the trim disconnect switch located on each control wheel, moving the ELEV TRIM switch located on the pedestal to the OFF position, pulling the ELEV

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TRIM circuit breaker, or positioning the BAT, L GEN, R GEN switches to OFF. Additionally, the representative added that the electric trim could be overridden by manually rolling the trim wheel.

When the 55-foot cable was routed correctly and wrapped around the drum, it resulted in two approximate equal portions of cable emanating from the trim drum. Both portions of cable proceeded downward below the floor of the cockpit. The nose-up cable portion was the forward cable originating from the drum, and approximately 27 feet 5 inches long. It traveled through sets of pulleys as it proceeded downward, and became the right cable traveling aft underneath the floor of the airplane cabin. The nose-up cable then crossed over a final pulley, becoming the left cable, before mating with the left turnbuckle. The end of the nose-up cable had left hand threads, which screwed into the left hand threads of the left turnbuckle. The left hand threads could not be screwed into the right turnbuckle, as it had right hand threads. The turnbuckles were located near the mid-point of the airplane.

The nose-down cable was the aft cable originating from the drum, and approximately 27 feet 2 inches long. It traveled through sets of pulleys as it proceeded downward, and became the left cable traveling aft underneath the floor of the airplane cabin. The nose-down cable then crossed over a final pulley, becoming the right cable, before mating with the right turnbuckle. The end of the nose-down cable had right hand threads, which screwed into the right hand threads of the right turnbuckle. The right hand threads could not be screwed into the left turnbuckle, as it had left hand threads.

From the turnbuckles, additional cables continued to travel aft and upward, terminating at the elevator trim actuators, which were attached via pushrods to the elevator trim tabs located at the inboard portion of the right and left elevator. The electric trim motor was installed at the base of the vertical stabilizer, beyond the first set of turnbuckles.

On the accident airplane, although the approximate 55-foot elevator trim cable was fragmented due to impact forces, five sections were recovered (assuming that the forward and aft cable emanating from the drum are counted as two sections). Three sections corresponded to the nose-up cable portion, and two sections corresponded to the nose-down cable portion. Cable marks made by the cable lock pin and digital flight data recorder bridle were used for orientation points, as was the intact elevator trim cable removed and replaced before the accident flight. Using those points and the intact elevator trim cable as a reference, the three sections of the nose-up portion of the accident cable measured to within 1.2 inches of the intact cable. However, the three sections resulted in the forward cable emanating from the trim drum terminating in the right turnbuckle, rather than the left turnbuckle (see Airworthiness Group Chairman's Factual Report for more detail and depictions).

An approximate 7-foot section of cable, which corresponded to the middle section of the nose-down portion of cable, was not recovered.

A mis-rigging demonstration was conducted at Raytheon Aircraft, Wichita, Kansas, on October 14 and 15, 2003. During the demonstration, the manual trim wheel was indexed to "0" when the elevator trim tabs were placed in the neutral position. Although the system was purposely mis-rigged, an operational check of the elevator trim system revealed the error. When the cockpit trim wheel was positioned nose down, the elevator trim tabs moved in a nose-up direction. When the cockpit trim wheel was positioned nose-up, the elevator trim tabs moved in a nose-down direction. When the electric trim motor was activated in one direction, the elevator tabs moved in the corresponding correct direction, but the trim wheel moved opposite of the commanded electric trim direction.

The mis-rigging demonstration also revealed that when the manual trim wheel was in the nose-down direction, the trim indicator in the cockpit moved well past the nose down limit, and the trim tabs were in the full nose up position. When the manual trim wheel was moved in the nose-up direction,

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Narrative (Continued)

the trim indicator did not reach the nose up limit. Rather, the indicator stopped near positive "3" units, and the trim tabs were in the full nose down position.

Flight Simulator

The Operations Group convened at Flight Safety International, Flushing, New York, on November 25, 2003. Using an FAA certified Level "D" Beech 1900 full motion simulator, the group attempted six simulations of the accident flight. The chief pilot of Colgan Air and an FAA inspector manipulated the controls during the flight simulations.

During all simulations, the elevator trim was positioned full nose-down shortly after takeoff. The simulator pilot attempted to maintain aircraft control using different power settings to obtain different airspeeds. Five of the six simulations resulted in an uncontrolled descent into terrain.

On the sixth test, the simulator pilot was able to partially maintain control of the airplane by gradually reducing engine power and maintaining an airspeed of approximately 170 knots. However, he had to return to the airport area at 170 knots, and touchdown at 180 knots. The airplane did not land on a runway, and subsequently impacted terrain.

ADDITIONAL INFORMATION

Sterile Cockpit Concept

Review of the Colgan Air flight operations policy and procedures manual (FOPP), revealed that during the periods of taxiing, takeoff, and altitudes below 10,000 feet indicated, the "flight crewmembers will not participate in any activity which could distract any flight crewmember from the performance of their duties or which could interfere in any way with the proper conduct of those duties." Examples given by the manual, of activities that were to be avoided, included "engaging in non-essential conversations."

Aircraft Maintenance and Flight Log

The FOPP also detailed the captain's responsibilities for determining the airworthiness of the airplane. It stated:

"Review/Verify the Aircraft Maintenance & Flight Log back to the latest valid Airworthiness Release and ensure that all discrepancies between that Airworthiness Release and the current log page are corrected or properly deferred. If the Captain determines that the aircraft status is other than listed on the release, the Captain will inform System Control and correct the inconsistency."

Review of the Aircraft Maintenance and Flight Log form for the accident flight revealed a discrepancy, which stated, "Flt. Data Recorder needs downloading due to mx. Replacement of Elevator trim cable (Fwd. Most)." The discrepancy was signed by a maintenance technician. The discrepancy was released and signed by the same maintenance technician, in accordance with an approved minimum equipment list, and supporting control number.

The captain noted to the first officer that the DFDR was an open item on the MEL; however, there is no record of the captain mentioning the replacement of the forward elevator trim cable.

Checklists

Review of Colgan Air's Beech 1900 Company Flight Manual revealed that it was FAA approved and contained the expanded normal checklist procedures, as well as abnormal and emergency procedures, and policies; all of which applied to Colgan Air flight operations.

The manual had specific guidance on the use of normal checklists and procedures, and was to be used

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Narrative (Continued)

to "ensure all safety items are accomplished." All of the checklists were to be accomplished using a challenge and response method (except for the climb and after landing checklists). The manual also gave guidance in the event that the checklist flow was interrupted. It stated;

"Interruptions to checklists increase the possibility of items being missed, which in turn may create hazards to flight operations. When interruptions occur, the crew must give consideration to restarting the checklist from the beginning, taking into consideration such factors as the length and type of interruption."

The following checklist excerpts were to have been accomplished by the accident flightcrew. The details of the checklists are focused on the elevator trim system and its related components and systems.

Preflight Checklist

The Preflight Checklist included, "Elevator, Elevator Tab, Static Wicks (4 each side) - Check & Verify Tabs are in Neutral Position."

Before Start Checklist

The Before Start Checklist required that the captain review the dispatch release and sign it. He was also required to review the maintenance release and the dispatch release with the first officer.

First Flight of the Day Checklist

After the engines had been started the checklist required that a "First Flight of the Day" check be performed by the flightcrew. The expanded items of the "Electric Pitch Trim" check included;

ELEV TRIM
Switch.....

.....ON
Pilot's and Copilot's Trim

Switches.....

.....CHECKED

- 1) Pilot's trim will override copilot's trim.
- 2) Movement of only half switch will not activate trim.

Trim Disconnect Switch.....PRESS TO 2ND LEVEL AND RELEASE

- 1) PITCH TRIM OFF Annunciator - ILLUMINATED
- 2) Electric Pitch Trim - DEACTIVATED

ELEV TRIM Switch.....OFF
then ON

PITCH TRIM OFF Annunciator - EXTINGUISHED

Electric Pitch
Trim.....SET FOR
TAKEOFF

Taxi Checklist

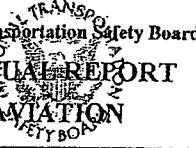
The expanded items of the Taxi Checklist included;

RAC 000213

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 FACTUAL REPORT AVIATION	NTSB ID: NYC03MA183					
	Occurrence Date: 08/26/2003					
	Occurrence Type: Accident					
Landing Facility/Approach Information						
Airport Name Barnstable Municipal Airport		Airport ID: HYA	Airport Elevation 55 Ft. MSL	Runway Used 33	Runway Length 5252	Runway Width 150
Runway Surface Type: Asphalt						
Runway Surface Condition: Dry						
Type Instrument Approach: NONE						
VFR Approach/Landing: None						
Aircraft Information						
Aircraft Manufacturer Beech		Model/Series 1900D			Serial Number UE-40	
Airworthiness Certificate(s): Transport						
Landing Gear Type: Retractable - Tricycle						
Homebuilt Aircraft? No	Number of Seats: 21	Certified Max Gross Wt. 17060 LBS		Number of Engines: 2		
Engine Type: Turbo Prop		Engine Manufacturer: Pratt & Whitney	Model/Series: PT6A-67D		Rated Power: 1214 HP	
- Aircraft Inspection Information						
Type of Last Inspection Continuous Airworthiness		Date of Last Inspection 08/2003	Time Since Last Inspection 0 Hours		Airframe Total Time 16503 Hours	
- Emergency Locator Transmitter (ELT) Information						
ELT Installed? Yes	ELT Operated? No	ELT Aided in Locating Accident Site? No				
Owner/Operator Information						
Registered Aircraft Owner Raytheon Aircraft Credit Corporation		Street Address 9709 East Central				
		City Wichita		State KS		Zip Code 67206
Operator of Aircraft Colgan Air Inc.		Street Address 10677 Aviation Lane				
		City Manassas		State VA		Zip Code 20110
Operator Does Business As: US Airways Express			Operator Designator Code: NSVA			
- Type of U.S. Certificate(s) Held:						
Air Carrier Operating Certificate(s): Flag Carrier/Domestic						
Operating Certificate:		Operator Certificate:				
Regulation Flight Conducted Under: Part 91: General Aviation						
Type of Flight Operation Conducted: Positioning						
FACTUAL REPORT - AVIATION						
RAC 000214						
Page 2						

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 FACTUAL REPORT AVIATION	NTSB ID: NYC03MA183	
	Occurrence Date: 08/26/2003	
	Occurrence Type: Accident	

Narrative (Continued)

Trims.....
.....SET

Verify proper trim indicator positions (UP 2 Units UC & 3 Units UE, ROLL 0, YAW 0) and state "SET."

Weight and Balance

Review of all available data revealed that the airplane was within the center of gravity envelope for the flight.

Safety Results

As a result of the Colgan Air flight 9446 investigation, and the investigation into Air Midwest flight 5481 (DCA03MA022), the Safety Board issued fourteen recommendations to the FAA pertaining to FAR Part 121 air carrier maintenance. One of the recommendations was specific to maintenance procedures for the Beech 1900.

During the course of the Colgan Air investigation, Raytheon Aircraft released Temporary Revision 27-9 of the AMM on September 12, 2003, titled "Manual Elevator Trip Operational Check." Raytheon then released Safety Communiqu 234 on September 24, 2003, and Temporary Revision 27-10 on October 22, 2003, which revised AMM 27-30-04 and updated the depiction of the forward trim drum. The FAA issued Airworthiness Directive (AD2003-20-10), which instructed operators to incorporate TR-27-9, and provided a change to the maintenance illustration depicting the forward trim drum.

Following the accident, Colgan Air issued an alert to its employees regarding possible trim problems. Colgan Air also expanded the trim check procedure on the First Flight of the Day and the Taxi checklists.

Wreckage Release

The wreckage was released to a representative of the owner's insurance company on August 31, 2003.

RAC 000215

This space for binding

 FACTUAL REPORT AVIATION		NTSB ID: NYC03MA183									
		Occurrence Date: 08/26/2003									
		Occurrence Type: Accident									
First Pilot Information											
Name On File			City On File			State On File	Date of Birth On File	Age 39			
Sex: M	Seat Occupied: Front	Principal Profession: Civilian Pilot				Certificate Number: On File					
Certificate(s): Airline Transport; Commercial											
Airplane Rating(s): Multi-engine Land; Single-engine Land; Single-engine Sea											
Rotorcraft/Glider/LTA: None											
Instrument Rating(s): Airplane											
Instructor Rating(s): None											
Type Rating/Endorsement for Accident/Incident Aircraft? Yes				Current Biennial Flight Review? 06/2003							
Medical Cert: Class 1		Medical Cert. Status: Valid Medical—w/ waivers/lim.				Date of Last Medical Exam: 03/2003					
- Flight Time Matrix		All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engines	Night	Instrument Actual Simulated		Rotorcraft	Glider	Lighter Than Air
Total Time		2891	1364								
Pilot In Command (PIC)			451								
Instructor											
Last 90 Days		211	211		211						
Last 30 Days		76	76		76						
Last 24 Hours		7	7		7						
Seatbelt Used? Yes		Shoulder Harness Used? Yes			Toxicology Performed? Yes			Second Pilot? Yes			
Flight Plan/Itinerary											
Type of Flight Plan Filed: IFR											
Departure Point Hyannis				State MA	Airport Identifier HYA		Departure Time 1538	Time Zone EDT			
Destination Albany				State NY	Airport Identifier ALB						
Type of Clearance: IFR											
Type of Airspace: Class D											
Weather Information											
Source of Briefing: Company											
RAC 000216											
Method of Briefing:											
FACTUAL REPORT - AVIATION											
Page 3											

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 FACTUAL REPORT AVIATION	NTSB ID: NYC03MA183	
	Occurrence Date: 08/26/2003	
	Occurrence Type: Accident	

Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
HYA	1556	EDT	55 Ft. MSL	4 NM	180 Deg. Mag.

Sky/Lowest Cloud Condition: Clear Ft. AGL Condition of Light: Day

Lowest Ceiling: None Ft. AGL Visibility: 10 SM Altimeter: 29.86 "Hg

Temperature: 23 °C Dew Point: 20 °C Wind Direction: Variable Density Altitude: Ft

Wind Speed: 6 Gusts: Weather Conditions at Accident Site: Visual Conditions

Visibility (RVR): Ft. Visibility (RVV) SM Intensity of Precipitation:

Restrictions to Visibility: None

Type of Precipitation: None

Accident Information

Aircraft Damage:	Aircraft Fire:	Aircraft Explosion
------------------	----------------	--------------------

Classification:

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL	
First Pilot	1				1	
Second Pilot	1				1	
Student Pilot						
Flight Instructor						
Check Pilot						
Flight Engineer						
Cabin Attendants						
Other Crew						
Passengers						
- TOTAL ABOARD -	2				2	
Other Ground						
- GRAND TOTAL -	2				2	

RAC 000217

This space for binding



National Transportation Safety Board	NTSB ID: NYC03MA183
FACTUAL REPORT	Occurrence Date: 08/26/2003
AVIATION	Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Robert J. Gretz

Additional Persons Participating in This Accident/Incident Investigation:

Floyd A James
FAA AAI-100
Washington, DC

Robert Ramey
Raytheon Aircraft Company
Wichita, KS

Dave Vance
Colgan Air Inc.
Manassas, VA

Richard Bunker
MA Aeronautics Commission
Boston, MA

Thomas Berthe
Pratt & Whitney Canada
South Burlington, VT

RAC 000218

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 19

ORIGINAL
(w/Fax Signature)

THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
Alexandria Division

COLGAN AIR, INC.,)
)
 Plaintiff,)
)
)
 RAYTHEON AIRCRAFT COMPANY,) CIVIL ACTION NO. 1:05 cv 213
)
)
 Defendant.)

**COLGAN AIR, INC. RESPONSES TO DEFENDANT'S
FIRST SET OF REQUESTS FOR ADMISSION**

COMES NOW Colgan Air, Inc. and responds to Defendant's Requests for
Admission as follows:

1. Admit that the aircraft was not defective in design.

RESPONSE: Denied.

2. Admit that your claims against Raytheon do not involve an assertion that the
aircraft was defective in design.

RESPONSE: Denied, but admits that the claims asserted in the Complaint are based on
the defective REPS Manual.

3. Admit that the aircraft was not defective in manufacture.

RESPONSE: Denied.

4. Admit that your claims against Raytheon do not involve an assertion that the
aircraft was defective in manufacture.

RESPONSE: Denied, but Colgan admits that the claims asserted in the Complaint are
based on the defective REPS Manual.

RESPONSE: Denied.

18. Admit that there were no handoff or shift notes from the day crew to the night crew regarding the cable replacement job.

RESPONSE: Denied.

19. Admit that the aircraft maintenance manual instructed the Colgan mechanics to use a lead wire in connection with the replacement of the forward elevator trim tab cable.

RESPONSE: Denied, but it is admitted that the REPS Manual, Chapter 27-30-04, called for attachment of lead lines to the forward trim tab cable during removal.

20. Admit that the Colgan mechanics did not use a lead wire in connection with the replacement of the forward elevator trim tab cable.

RESPONSE: Admitted.

21. Admit that the maintenance manual directed Colgan's mechanics to rig the cable per Chapter 27-30-05 ELEVATOR TAB CONTROL RIGGING-MAINTENANCE PRACTICES.

RESPONSE: Denied.

22. Admit that both the installation procedure and the rigging procedures instruct the mechanic it may be necessary to re-index the manual trim wheel to 0, when the elevator trim tabs are in neutral.

RESPONSE: Denied, but it is admitted that the REPS Manual, Chapter 27-30-04, states that "[i]f necessary, adjust the indicator in the flight compartment to 0 while the tabs are neutral to the elevator."

23. Admit that the Colgan mechanics did not re-index the manual trim wheel to 0, when the elevator trim tabs were in neutral.

RESPONSE: Denied.

59. Admit that if the flight crew had properly performed the first flight of the day checklist, the mis-rigging would have been detected.

RESPONSE: Denied.

60. Admit that Colgan does not specifically require its mechanics to refer to the Maintenance Manuals when performing repairs.

RESPONSE: Denied.

61. Admit that all Colgan's claimed damages are economic damages.

RESPONSE: Denied.

Date: 6/10/05

Colgan Air, Inc.

David L. Hause

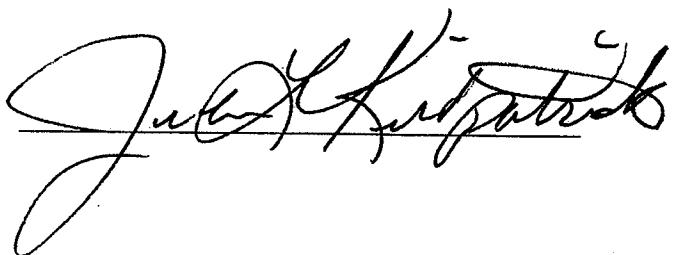
CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Responses to Defendant's First Set of Request for Admission was served this 10th day of June 2005, by fax and email on the following:

Robert T. Hall, Esquire VSB #4826
Holly Parkhurst Essing, Esquire VSB #17538
HALL, SICKELS, FREI & KATTENBURG
12120 Sunset Hills Road, suite 150
Reston, VA 20190

Michael G. Jones, Esq.
Martin Pringle
100 N. Broadway
Suite 500
Wichita, KS 67202

Date: June 10, 2005



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EXHIBIT 20

COLGAN AIR



**GENERAL MAINTENANCE
MANUAL**

C00087

COLGAN AIR

GENERAL MAINTENANCE MANUAL

VOL X

3.1.0 General Maintenance Policies

- A. Colgan Air, Inc. will maintain safe and airworthy aircraft that are in compliance with the standards and procedures mandated by the FAR(s). All Colgan Air, Inc. personnel are responsible for the enforcement of a basic policy of safety. Essential elements of safety include, but are not limited to, high quality condition of aircraft with meticulous inspection before flight, thorough training and motivation of personnel, scrupulous attention to duty, sound operational planning, efficient use of resources, and highest caliber of judgment in the conduct of all ground and air operations. Colgan Air, Inc. operations are based on the concept that safety comes first.
- B. Each person employed by Colgan Air, Inc. who is directly in charge of maintenance, preventive maintenance, or alteration, and each person performing required inspection must hold an appropriate airmen certificate. Each person who holds a certificate shall notify the Director of Maintenance immediately upon any suspension or revocation of that certificate and shall not perform any duties which require the certificate while under suspension or revocation.
- C. Each person performing maintenance or preventive maintenance including inspection personnel shall be trained to ensure that each person who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform their duties. Colgan Air, Inc. training procedures can be found in Volume XIII of this manual.
- D. Each person performing maintenance or preventive maintenance functions for the certificate holder will be relieved from duty for a period of at least twenty four (24) hours during any seven (7) consecutive days, or the equivalent thereof within any calendar month.
- E. Colgan Air, Inc. will operate a Continuing Analysis and Surveillance System Program (CASP) to evaluate the performance and effectiveness of its own inspection program and the program covering other maintenance, preventative maintenance, and alterations and for the correction of any deficiencies in those programs, regardless of whether those programs are carried out by Colgan Air or by other maintenance personnel. The CASP is detailed in Volume XV.
- F. Each person performing maintenance or preventive maintenance functions for the certificate holder will have on hand, and follow, the instructions prescribed in the current manufacturers maintenance manuals, workcards, or other data acceptable to the administrator.

3.1.1 Responsibilities For Maintenance - FAR 121.363(a)(2)

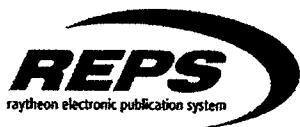
- A. All persons in the management structure of maintenance are responsible for familiarity with:
 - 1. This manual and its defined maintenance policies.
 - 2. The pertinent FAR's
 - 3. The C.A.M.P.
- B. Maintenance personnel are responsible for familiarizing themselves with all sections of this GMM which pertain to their job description.

3.1.2 Maintenance Forms General

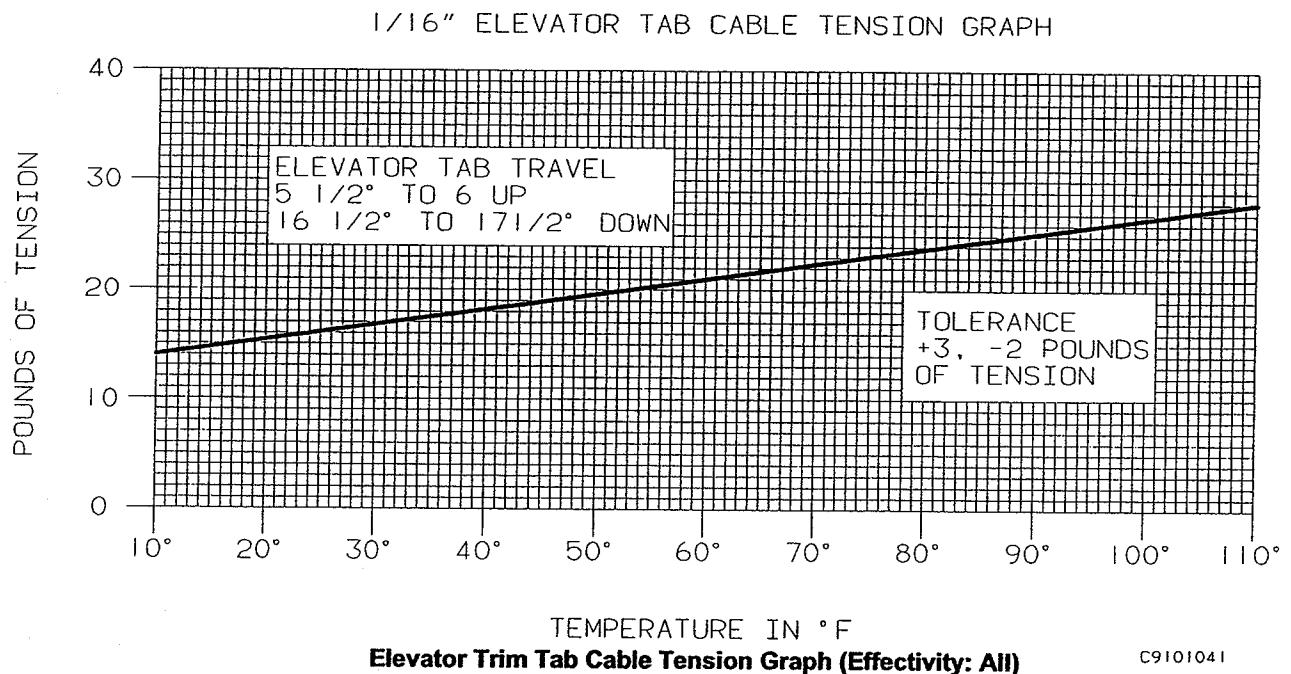
- A. It is imperative that maintenance/inspection forms and records be properly and uniformly completed by appropriate personnel to ensure that no work action is overlooked or misunderstood. No maintenance action may take place until an appropriate entry is made in the aircraft records called out in this section. Good maintenance recording practices are essential to clearly identify the work performed assisting other personnel in evaluating the condition of the aircraft. The following procedures apply to all forms used in Colgan Air, Inc. maintenance and inspection operations:

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Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 21



Beech 1900D Airliner Maintenance Manual (UE-1 and After)
Elevator Tab Control Rigging - Maintenance Practices

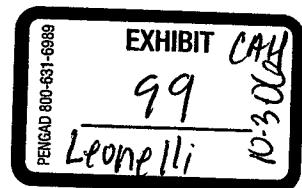


27-30-05-201

Figure 201

Printed from REPS Airliner Revision 9 - May 2003
(P/N 129-590000-15 Revision A30 October 26 2002)

Page 1





Beech 1900D Airliner Maintenance Manual (UE-1 and After)

Elevator Tab Control Rigging - Maintenance Practices

ELEVATOR TAB CONTROL RIGGING - MAINTENANCE PRACTICES (EFFECTIVITY:

ELEVATOR TRIM TAB RIGGING - MAINTENANCE PRACTICES (EFFECTIVITY: ALL) (FIGURE 201)

NOTE: Before attaching cable clamps and cables to the elevator trim cables, ensure that all twist is removed from the elevator trim cables by operating the system at least six (6) times from stop to stop.

NOTE: The elevator control system must be properly rigged before the elevator tab system can be rigged.

- a. Place the elevators in neutral and install the rig pin in the aft elevator bellcrank. Access to the aft elevator bellcrank is through an access plate (331AL, 6-00-00) in the left side of the vertical stabilizer, just below the horizontal stabilizer.
- b. Rig the cables to the proper tension as shown in Figure 201.
- c. Set the control wheel on the pedestal so the tab indicator reads 0.
- d. Adjust the turnbuckles to maintain the 3.07-inch dimension shown in Chapter 27-30-04, Figure 201.
- e. Adjust the push-pull rods by loosening the two jam nuts on the adjustment stud and rotating the adjustment stud to bring the elevator tab to 0° position. Adjust each push-pull rod separately to match each other.

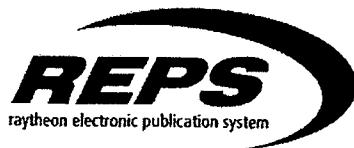
After adjustment, each end of each adjustment stud must be visible through the inspection holes. Tighten the jam nuts, taking care not to alter push-pull rod adjustments and install .032-inch safety wire through the jam nuts and adjustment studs. Install the push-pull rod attaching fasteners and tighten the outer clevis jam nuts.

- f. Using the travel board (6, Chart 1, 27-00-00), adjust the elevator trim tab for a deflection of 5 1/2° + 1/2° -0° up from neutral and 16 1/2° + 1° -0° down from neutral with the cable stops in the aft fuselage section. Torque the stops to 40-50 inch-pounds and safety as shown in Figure 201, Detail C, Chapter 27-30-04.
- g. Check the movement of the elevator trim tab. A servo travel of 4 1/2° ±1° down at full up elevator and 1 1/2° ±1/2° up at full down elevator is permissible. Maximum allowable servo travel differential (lagging tab) between the left tab and the right tab is to be 1° at full up elevator and 1/2° at full down elevator. If servo adjustment is required, a maximum of one laminated shim (P/N 130-524031-3) may be placed between the adapter and the actuator flange. Adjustment of the actuator is accomplished by removing laminations from the shim as required to obtain the correct servo tab travel.

NOTE: To increase servo (lag), install shims under the bottom actuator flange. To decrease servo (lag), install shims under the top actuator flange. Add or remove shims under only the top or bottom of the actuator flange.

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Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 22



Beech 1900D Airliner Maintenance Manual (UE-1 and After)

Elevator Trim - Maintenance Practices

ELEVATOR TRIM - MAINTENANCE PRACTICES

ELEVATOR TRIM OPERATIONAL CHECK

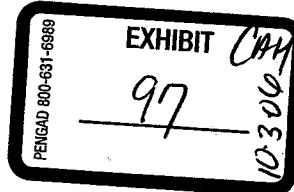
- a. Perform the APPLYING GROUND POWER procedure. Refer to Chapter 24-40-00.
- b. Set the elevator trim switch, located on the pedestal, to the "ON" position.
- c. Actuate each switch of the dual trim switch, on the pilot's and copilot's control wheel, independently to the "NOSE DOWN" and the "NOSE UP" position and verify that the trim system does not activate.

CAUTION: WHILE PERFORMING THIS PROCEDURE DO NOT KEEP THE TRIM BUTTONS (SWITCHES) DEPRESSED AFTER THE TRIM TAB HAS REACHED ITS FULL LIMIT OF TRAVEL.

- d. Actuate both trim switches on the pilot's control wheel to the "NOSE UP" position and note the trim wheel movement in the proper direction as well as full travel. Verify visually that the trim tab itself travels to the proper position (trim tab full down).
- e. Actuate both trim switches on the pilot's control wheel to the "NOSE DOWN" position and note the trim wheel movement in the proper direction as well as full travel. Verify visually that the trim tab itself travels to the proper position (trim tab full up).
- f. Repeat steps d and e on the copilot's control wheel.

NOTE: Review steps g and h before proceeding with this procedure. Time critical actions are involved.

- g. Actuate both trim switches on the copilot's control wheel to the "NOSE UP" position, the trim wheel begins moving. After 3-5 seconds perform step h.
- h. Actuate both trim switches on the pilot's control wheel to the "NOSE DOWN" position. As soon as the trim wheel reverses its direction of travel, release ALL trim buttons. This verifies pilot override.
- i. Actuate both trim buttons on the pilot's control wheel to the "NOSE UP" position and while trim tab is in travel depress the red disconnect switch on the control wheel to the second detent position and release. Note the "PITCH TRIM OFF" annunciator is illuminated and the elevator trim system is deactivated.
- j. Reactivate the elevator trim system by setting the elevator trim switch it to "OFF" then "ON" and repeat step f on the copilot's control wheel.
- k. Set the elevator trim switch to the "OFF" position and manually rotate the elevator trim wheel to the stops in both directions to check for freedom of movement. Repeat this step with the elevator trim switch set to the "ON" position and verify freedom of movement.
- l. Perform the REMOVING GROUND POWER procedure. Refer to Chapter 24-40-00.



27-30-09-201

Printed from REPS Airliner Revision 9 - May 2003
'P/N 129-590000-15 Revision A30 October 26 2002)

NOTE: If you have chosen a 'selected text' print out, from REPS (Raytheon Electronic Publication System) - The selection may not include all relevant data, such as; process specifications, Warnings, Cautions & Notes that may be found elsewhere in the complete document or in other applicable service information documents. Make sure you have read and understood all associated information before performing any maintenance on the aircraft. It is the responsibility of the mechanic, repairman or inspector to understand the current instructions of the manufacturer and the manuals, for the specific operation concerned.

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Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 23

ORIGINAL

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE EASTERN DISTRICT OF VIRGINIA
3 ALEXANDRIA DIVISION

4 COLGAN AIR, INC., :
5 Plaintiff, :
6 vs. : Civil Action
7 RAYTHEON AIRCRAFT COMPANY, : No. 1:05 cv 213
8 Defendant. :
9

10
11 McLean, Virginia
12 Friday, September 9, 2005
13

14 Videotaped deposition of FREDERICK J. LEONELLI,
15 witness, called for examination by counsel for the
16 defendant, pursuant to notice, at the offices of
17 Thomas B. Almy, Esq., Dombroff & Gilmore, P.C.,
18 1676 International Drive, Penthouse, McLean, Virginia,
19 before Malynda D. Whiteley, a Registered Professional
20 Reporter and a notary public in and for the State of
21 Virginia, beginning at 10:17 a.m., when were present on
22 behalf of the respective parties:

1 control wheel to the nose up position" --

2 A Right.

3 Q -- "and note to trim wheel moves in the proper
4 direction," first of all; correct?

5 A Yeah. As long as they know what the proper
6 direction is; right.

7 Q Well, that's even marked on the trim wheel, isn't
8 it?

9 A Yeah, yeah.

10 Q It tells the average bear that up is up and down
11 is down, doesn't it?

12 A Yeah. We're assuming, though, they had this
13 procedure, which they didn't, as far as I read, because it
14 wasn't in the table of contents. So I don't know. I mean
15 you can speculate on it (inaudible) what the depositions
16 are now, and I'm hearing that they didn't know there was
17 this operational chapter.

18 Q It's indicated in your report that you
19 understood -- specific quote, you --

20 A Uh-huh.

21 Q -- I'm trying to find it.

22 -- on page 4 first, full paragraph, an elevator

1 trim operational check, 27-30-09, did exist in the manual;
2 correct?

3 A Right, right.

4 Q It was there?

5 Your criticism is there is no reference link to
6 it?

7 A Right.

8 Q And it was not listed in the table of contents --

9 A Right.

10 Q -- correct?

11 Have you -- and you have not looked at the paper
12 copy of the manual to see whether it's in the table
13 contents of the paper manual?

14 A No.

15 Q All right. If you did so, would you be surprised
16 to learn that it's in the table of contents of the -- of
17 the paper manual?

18 A I would think. And then I would -- I would
19 question which is the most reliable current manual. I mean
20 if you got a REPS manual that I'm supposed to use, or is it
21 the hard copy? And if the hard copy has it, why doesn't
22 the automated copy have it?

1 Q So I understand, then, your opinion is based on
2 the assumption that the mechanics used the REPS version --

3 A Right.

4 Q -- and not the paper version?

5 A Right.

6 Q That using the REPS version, there was no link to
7 the operational check in it --

8 A Right.

9 Q -- correct?

10 A Yes.

11 Q And that the mechanics, therefore, did no
12 operational check?

13 A They -- according to their depositions now, they
14 did the operational check; but they didn't have this
15 procedure in front of them because they didn't have it.

16 Q It's there, is it not? It's just not in the
17 table of contents?

18 A Well, you need to know it's there. Yeah, sure.

19 Q And, sir, if they had run the operational check
20 with the point that you and I have spent some time on, they
21 would have observed two things about the performance of
22 subpart D, would they not; that when they activated the

1 electric trim nose up, the manual wheel went nose down?

2 A Yeah. They would have had the information to
3 actually validate what they were supposed to be looking at.

4 Q If you can, if they did part D, electric trim
5 nose up, they would have observed that the manual wheel
6 went nose down; correct?

7 A They should have, yeah.

8 Q As well as full travel; they would have observed
9 that this the manual wheel went way beyond its nose down
10 limits; correct?

11 A Yeah.

12 Q And would also have observed that it fell far
13 short of and seeming jammed in nose up many units before
14 its nose up range?

15 A Well -- yeah, right. Yes.

16 Q And then it says, "Verify visually that the trim
17 tab itself travels to the proper position"; correct?

18 A Yes.

19 Q And in parentheses, "Trim tab full down".

20 A (The witness moves head up and down.)

21 Q Correct?

22 A Right.

1 Q Trim tab full down is full nose up, isn't it?

2 A Yes; that's what it says.

3 Again, though, we're assuming -- I mean if they
4 had this, this may not have been an issue. But according
5 to them, they didn't have this procedure; so they're doing
6 it from memory or their knowledge, again, without having
7 this to go by.

8 Q E that follows D is to run the switches and the
9 system through its nose down --

10 A Right.

11 Q -- trim; correct?

12 A That's correct.

13 Q And in F is to repeat those steps on the
14 copilot's control wheel.

15 A Right.

16 Q Did you in the course of preparing your report
17 look at any of the pilot check lists?

18 A No.

19 Q Do you know what the first flight of the FAA
20 checklist for this Beech 1900D includes with respect to the
21 trim system?

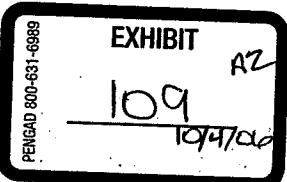
22 A No.

Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment

EXHIBIT 24

FIRST FLIGHT OF THE DAY (CONT'D)
(UE Series Aircraft)

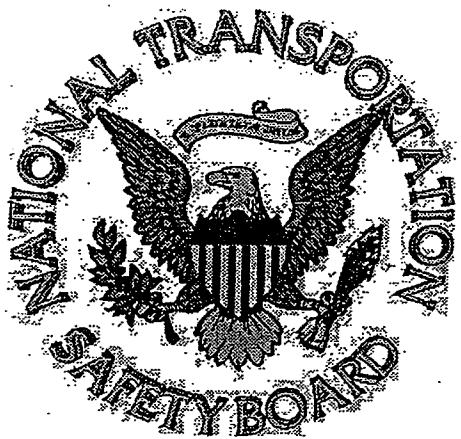
Environmental System	CHECKED
► Envir Mode Control	"T" Test
L and R ENVIR FAIL, L and R ENVIR OFF Annunciators - ILLUMINATED	
► Envir Mode Control	AUTO
► Bleed Air Valves	ENVIRONMENTAL OFF
L and R ENVIR FAIL Annunciators - EXTINGUISHED	
► Bleed Air Valves	OPEN
L and R ENVIR OFF Annunciators - EXTINGUISHED	
► Blowers	AS DESIRED
► Temp Control	AS DESIRED
Electric Pitch Trim	CHECK
► ELEV TRIM Switch	ON
► Pilot's and Copilot's Trim Switches	CHECKED
1) Pilot's trim will override copilot's trim.	
2) Movement of only half of switch will not activate trim.	
► Trim Disconnect Switch	PRESS TO 2ND LEVEL AND RELEASE
1) PITCH TRIM OFF Annunciator - ILLUMINATED	
2) Electric Pitch Trim - DEACTIVATED	
► ELEV TRIM Switch	OFF then ON
PITCH TRIM OFF Annunciator - EXTINGUISHED	
WARNING	
<i>Operation of the electric trim system should occur only by movement of pairs of switches. Any movement of the elevator trim wheel while depressing only one switch denotes a system malfunction. The elevator trim switch must then be turned OFF and flight conducted only by manual operation of the trim wheel.</i>	
Electric Pitch Trim	SET FOR TAKEOFF
Engine Anti-Ice & Other Systems Used For Icing In Flight	CHECKED



*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 25

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorders Division
Washington, D.C. 20594



GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION

Cockpit Voice Recorder

NYC03MA183

by

**Douglass P. Brazy
Mechanical Engineer (CVR)**

Warning

The reader of this report is cautioned that the transcription of a CVR tape is not a precise science but is the best product possible from an NTSB group investigative effort. The transcript, or parts thereof, if taken out of context, could be misleading. The attached CVR transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

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CVR Group Chairman's Factual Report
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NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorders Division
Washington, D.C. 20594

October 3, 2003

Cockpit Voice Recorder

Group Chairman's Factual Report
by Douglass P. Brazy

A. ACCIDENT

Location: Yarmouth, MA
Date: August 26, 2003
Time: 1540 Eastern Daylight Time
Aircraft: Beech (Raytheon) 1900D, N240CJ
Operator: Colgan Air Inc.

B. GROUP

Chairman: Douglass P. Brazy
Mechanical Engineer (CVR)
National Transportation Safety Board

Member: Stephen M. Demko
Air Safety Investigator
National Transportation Safety Board

Member: L.I. "Lou" Johansen
Engineering Test Pilot
Raytheon Aircraft Company

Member: Daniel P. Diggins
Air Safety Investigator
Federal Aviation Administration

Member: LaDonn James Nunn
VP Operations
Colgan Air Inc.

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C. SUMMARY

On August 26, 2003, at 1540 eastern daylight time, a Beech 1900D, N240CJ, operated by Colgan Air Inc. as flight 9446 (d.b.a. US Airways Express), was destroyed when it impacted water near Yarmouth, Massachusetts. The certificated airline transport pilot and certificated commercial pilot were fatally injured. Visual meteorological conditions prevailed for the flight that departed Barnstable Municipal Airport (HYA), Hyannis, Massachusetts, destined for Albany International Airport (ALB), Albany, New York. An instrument flight rules flight plan was filed for the repositioning flight conducted under 14 CFR Part 91.

The Cockpit Voice Recorder (CVR) contained approximately thirty-four minutes of audio. The first fifteen minutes of the recording contained some conversations among maintenance personnel and sounds consistent with maintenance work. Relatively loud banging sounds similar to hammering can be heard repeatedly throughout this portion of the recording. Subsequently, several sounds similar to electrical power interruptions occur, followed by the first conversations between the flight crew. The CVR group transcribed the latter half of the recording, beginning at the time the flight crew can first be heard, and continuing to the end of the recording. The transcript can be found in Attachment II.

D. DETAILS OF INVESTIGATION**Recorder Examination**

The NTSB Vehicle Recorders Division received a Fairchild¹ model A100A, serial number 61870 magnetic tape CVR. The exterior of the CVR showed evidence of substantial structural damage.

¹ Fairchild is now known as L³ Communications.

Recorder Disassembly, Tape Removal and Preparation

The recorder was disassembled using normal tools. An optional DC to AC inverter was found installed in the recorder chassis. The internal tape spool dustcover was easily removed, and the tape and spool were found to be intact and in good condition. The only notable damage inside the crash case was some corrosion of the various metallic parts. The tape and spool were found to be wet, but otherwise intact.

The tape spool cover was removed with normal tools. The endless tape was then cut with a scissors, adjacent to the tape head assembly on the "oldest data" side of the head assembly. The tape and spool were removed from the recorder. A leader tape was spliced to each end. The tape and spool were then immersed in a bath of distilled water for cleaning. While underwater, the tape was spooled to a conventional reel for use with the CVR lab's tape playback equipment. After rinsing, the tape was removed from the water bath for further cleaning and drying. This process is done by manually spooling the tape back and forth between two reels while gently wiping the tape clean with a gauze cloth soaked in a cleaning solvent. During this process, a visual examination of the tape revealed no mechanical damage. Once cleaned and dried, the tape was played back normally and without difficulty using the CVR lab's playback equipment.

Readout

The tape was played back at the nominal speed of 1-7/8 inches per second. Typically, a 400 Hz tone (and its harmonics) heard on many CVR recordings as "background noise" can be used to fine tune the playback speed in attempt to play back the tape back at a speed as close as possible to the speed at which it was recorded. This tone was not readily apparent on this recording, which is typical of recorders fitted with an optional DC to AC inverter, as this one was.

The audio on the tape was recorded to a digital computer based audio system, to preclude any undue wear on the original tape. This digital recording was then used for subsequent evaluation by NTSB staff and the CVR group.

CVR Channels

The recording consisted of four channels of audio information, with the quality of the audio ranging from Poor to Good². One channel contained the cockpit area microphone (CAM) audio information. The CAM is mounted in the cockpit, in the overhead panel between the two pilots. It is designed to capture sounds and conversations in the cockpit area whenever the CVR system is powered. The CAM channel quality was Good.

Two of the channels contained audio information obtained from the Captain's and First Officer's audio panels, respectively. The audio panels are essentially an interface between the pilot's headsets (or the cockpit speaker) and the airplane's radio communication equipment. Radio transmissions (both transmitted and received), are captured on these channels. Additionally, "hot" microphone signals (when used) are captured through the audio panels on these channels. Hot microphones are the same microphones in the pilot's headsets that can be used for making radio transmissions. The "hot" means that they are intended to always be on and recorded by the CVR, whether or not a radio transmission is being made. However on this recording, it appears that the microphone signals captured by the CVR (from both the Captain's and First Officer's headsets) were voice activated. This is evident by the squelching of the hot microphone audio than can be heard (and seen in waveforms of the signal) numerous times after the pilots finish speaking a word or phrase. This is most noticeable whenever the background ambient noise is at a relatively low level.

Federal Aviation Administration regulations require that large turbine powered airplanes be equipped with CVR systems that record uninterrupted audio signals

² See Attachment I for a CVR Quality Ranking Scale.

received by boom microphones.³ This CVR installation may not have been in compliance with those regulations.

The First Officer's channel was recorded at a much lower volume than the other 3 channels. No incoming radio transmissions could be heard on this channel, though the First Officer did communicate with the Air Traffic Control Tower. It appears that the Captain and First Officer were using an intercom, however the Captain's voice could not be heard at all on the First Officer's Channel. A CVR test tone that can be heard briefly on this channel when the Captain performs the CVR test at 1423:51. The volume of the tone is significantly lower on this channel than it is on the Captain's channel. The quality of this channel was rated Poor.

Low signal level (volume) for VHF radio – as recorded by the CVR – is a historical problem for the Beech (Raytheon) 1900 airplanes. In 1997, after experiencing a number of similar problems with B1900 airplanes, the NTSB issued a recommendation⁴ to the Federal Aviation Administration (FAA) to address the problem. Additionally, Raytheon developed a Service Bulletin (S/B 23-3094) that outlined the replacement of an amplifier in the airplane's audio system. In 2000, the FAA issued Airworthiness Directive AD 2000-20-07, which required that all applicable B1900 airplanes comply with the tasks outlined in the Raytheon Service Bulletin.

According to the airplane's maintenance records, AD 2000-20-07, S/B 23-3094 was complied with on this airplane on December 19, 2002.

The audio from the Captain's channel was significantly louder than the audio from the First Officer's channel. The CVR test tone appeared normal. The hot mic signals and radio transmissions could both be heard relatively clearly except during the few times that they occur simultaneously. The First Officer could be heard on the Captain's channel as is typical when an intercom is used. The quality of this channel was rated as Good.

³ See 14 CFR 121.359(g). The relevant portion of this regulation applies to airplanes manufactured after October 11, 1991. The accident airplane (serial number UE-40) was manufactured in March of 1993.

⁴ NTSB Recommendation A-97-036 was Closed – Acceptable Action in January 2001

The fourth channel is typically wired to the airplane's Public Address System in the B1900. There were no PA announcements made by the crew. This channel contains some audio from both pilots' hot mics as well as incoming and outgoing radio transmissions. The volume of this audio is slightly lower than the audio on the Captain's Channel, but louder than any audio of the First Officer's Channel. The presence of this audio suggests that this CVR channel is possibly configured to capture audio from a 3rd audio panel, such as an observer's panel.

Group Activities

The CVR group convened on August 28, 2003. The group reviewed the tape and prepared a partial transcript of the recording. Each channel was reviewed individually as well as in combination with the other channels. There was little difficulty identifying the sources of each comment, and the group agreed on the content of each comment and characterization of each sound in the attached transcript.

Timing and Correlation

The times reported in the attached CVR transcript are Eastern Daylight Time (EDT). The Flight Data Recorder Group Chairman provided the correlation of the CVR elapsed time with the Flight Data Recorder time. The Aircraft Performance Specialist provided the correlation of the Flight Data Recorder time with to the recorded radar data provided by the Federal Aviation Administration's Boston Air Route Traffic Control Center (ARTCC). The times in this report reflect the clock used by Boston ARTCC, converted to the local time zone.

The times represent the beginning of the phrase or sound, and were generally measured and reported to the nearest 1 second. However, certain comments or sounds, such as the microphone clicks heard before and after each outgoing radio transmission, were measured and reported to the nearest 1/10 of a second.

Douglass P. Brazy

Mechanical Engineer (CVR)

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Attachment I
CVR Quality Rating Scale

The levels of recording quality are characterized by the following traits of the cockpit voice recorder information:

Excellent Quality Virtually all of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate only one or two words that were not intelligible. Any loss in the transcript is usually attributed to simultaneous cockpit/radio transmissions that obscure each other.

Good Quality Most of the crew conversations could be accurately and easily understood. The transcript that was developed may indicate several words or phrases that were not intelligible. Any loss in the transcript can be attributed to minor technical deficiencies or momentary dropouts in the recording system or to a large number of simultaneous cockpit/radio transmissions that obscure each other.

Fair Quality The majority of the crew conversations were intelligible. The transcript that was developed may indicate passages where conversations were unintelligible or fragmented. This type of recording is usually caused by cockpit noise that obscures portions of the voice signals or by a minor electrical or mechanical failure of the CVR system that distorts or obscures the audio information.

Poor Quality Extraordinary means had to be used to make some of the crew conversations intelligible. The transcript that was developed may indicate fragmented phrases and conversations and may indicate extensive passages where conversations were missing or unintelligible. This type of recording is usually caused by a combination of a high cockpit noise level with a low voice signal (poor signal-to-noise ratio) or by a mechanical or electrical failure of the CVR system that severely distorts or obscures the audio information.

Unusable Crew conversations may be discerned, but neither ordinary nor extraordinary means made it possible to develop a meaningful transcript of the conversations. This type of recording is usually caused by an almost total mechanical or electrical failure of the CVR system.

Attachment II – Transcript

Partial transcript of a Fairchild A100A cockpit voice recorder (CVR), s/n 61870, installed on a Beech (Raytheon) B1900D, Registration N240CJ. The airplane was operated by Colgan Air Inc. as flight 9446 on a repositioning flight when it crashed off the coast of Yarmouth, MA on August 26th, 2003.

LEGEND

RDO	Radio transmission from accident aircraft, Colgan Air 9446
CAM	Cockpit area microphone voice or sound source
HOT	Hot microphone voice or sound source
	For RDO, CAM, and HOT comments:
	-1 Voice identified as the Captain
	-2 Voice identified as the First Officer
	-3 Voice of unidentified ground personnel
	-? Voice unidentified
STN	Radio transmission from station agent
MX	Radio transmission from Colgan maintenance facility at Hyannis
GND	Radio transmission from ground control at Hyannis
TWR	Radio transmission from Air Traffic Control Tower at Hyannis
Ch1	Audio heard on the First Officer's CVR Channel
Ch2	Audio heard on the PA CVR channel
Ch3	Audio heard on the Captain's CVR channel
*	Unintelligible word
&	Third party personal name (see note 5 below)
@	Non-pertinent word
#	Expletive
---	Break in continuity or interruption in comment
()	Questionable insertion

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[] Editorial insertion

... Pause

Note 1: Times are expressed in Eastern Daylight Time (EDT).

Note 2: Generally, only radio transmissions to and from the accident aircraft were transcribed.

Note 3: Words shown with excess vowels, letters, or drawn out syllables are a phonetic representation of the words as spoken.

Note 4: A non-pertinent word, where noted, refers to a word not directly related to the operation, control or condition of the aircraft.

Note 5: Personal names of 3rd parties not involved in the conversation are generally not transcribed.

Note6: At times, some sounds may be heard on more than one channel. For example, the CAM may also capture speech captured by a HOT microphone. Comments are generally annotated as coming from the source from which the comment was easiest to hear and discern.

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INTRA-COCKPIT COMMUNICATIONAIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
????:??	[Start of Recording - Due to electrical power interruption(s), neither the time of day nor the date could be established prior to 14:23:30. The recording contained a total of approximately 15 minutes and 20 seconds of audio prior to this time. The nature of this audio was consistent with maintenance work occurring inside the airplane's cockpit and/or cabin.]		
1423:30	[start of Transcript]		
CAM	[sound similar to power interruption]		
1423:31	[sound of unidentified tone]		
CAM-1	all right before start.		
1423:39			
CAM-2	parking brake?		
1423:41			
CAM-2			
1423:42	CAM-1 its set.		
CAM-1			
1423:43			
CAM-2	preflight's complete. cockpit scan complete.		
1423:45			
CAM-1	complete.		
1423:46			
CAM-2	oxygen system check?		

RAC 000384

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1423:47 CAM-1	uhhh... it was checked.		
1423:48 CAM-2	circuit breakers check?		
1423:51 CAM-1	checked.		
1423:51 CAM-2	CVR tested?		
1423:51.5 Ch3	[sound similar to CVR test tone for 1.4 seconds]		
1423:52 CAM-1	its tested.		
1423:52.8 Ch1	[sound similar to CVR test tone for 0.5 second, at significantly lower volume than the tone heard on channel 3]		
1423:53.3 Ch2	[sound similar to CVR test tone for 0.03 seconds at a volume comparable to the tone heard on channel 1]		
1423:53 CAM-2	FDR test and set?		
1423:55 CAM-1	test and set.		
1423:55 CAM-2	flight control rudder lock?		

RAC 000385

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1423:57 CAM-1	removed.
1423:58 CAM-2	maintenance log, release, checked the aircraft.
1423:59 CAM-1	uhhhh. maintenance and release on aircraft.
1424:02 CAM-2	fuel (quantity)?
1424:04 CAM-1	uhhh. thirty two.
1424:06 CAM-2	thirty two.
1424:07 CAM-2	cabin signs on.
1424:09 CAM-1	on.
1424:09 CAM-2	seatbelts shoulder harnesses on.
1424:11 CAM-1	uhhhh duh duh duh. (we have a little) F D R. ok flight data recorder... and make sure.

RAC 000386

INTRA-COCKPIT COMMUNICATIONAIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1424:21 CAM-1	it says flight data recorder's inop, I just wanna make sure... thirty one dash three... thirty one dash three A...uhhhh twenty seven... twenty eight... thirty one dash three. ok...up here. done.	1424:46 CAM-2	ok.
1424:47 CAM-1	(eighty) one seventy three... let me check that MEL number... eighty one seventy three is still open... * open... item.	1425:02 CAM-1	all right. clear on two?
1425:04 CAM-2	clear on two with a cap.	1425:05 CAM-1	all right. beacon is on. (put my master on) beacon is-
1425:11 CAM-3	stay on the radios. [voice in background]	1425:14 CAM-2	what did he say?
1425:15 CAM-1	stay on the radio.	1425:17 CAM-1	clear on two?

RAC 000387

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1425:18 CAM	CAM-2 clear on two with a cap.	1425:20 CAM	[unidentified tone duration 0.27 second similar to tone heard when avionics master switch is operated]
1425:21 CAM-1	well lets talk to 'em right now before we even spin up.	1425:29.3 RDO-1	hey &, how do you hear? [RDO or HOT]
1425:43 CAM-1	all right I got no radios over here... do you have anything out of your headset?	1425:51 CAM-2	check check check.
1425:53 CAM-1	all right, hold on.	1425:54 CAM/ch3	[sound similar to altitude alerter]
1425:55 CAM-2	check check check check check check	1425:57 CAM/ch3	[sound similar to blowing breath] ok. MAN tie's closed.

RAC 000388

INTRACOCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1425:59 CAM-2	check check check check check check	1425:57.8 RDO-1	and Hyannis maintenance Colgan ninety four forty six.
1426:00 HOT-2	[sound similar to static] check check.	1426:08.0 RDO-1	Hyannis maintenance, ninety four forty six.
		1426:14.4 RDO-1	&, &, anybody in the office there?
		1426:20 STN	hey Scott I'll try to get a hold of them on the phone.
		1426:22.3 RDO-1	thanks &.
1426:25 HOT-1	all right clear on two.		
1426:27 HOT-2	with a cap.		
1426:28 ch3	[sound similar to engine igniter electrical noise]		
1426:29 HOT-1	what a cluster.		

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1426:31 HOT-2	[sound of laughter]	1426:36 CAM	[sound similar to engine noise increasing in speed]
1426:40 HOT-2	whats our weight?	1426:41 HOT-1	uhhh, I calculated lets see we got thirty two hundred, and we weigh ten seven, so uh fourteen thousand.
1426:49 HOT-2	thirteen for landing?	1426:50 HOT-1	uhhh, burn yeah, fourteen thirteen's fine.
1427:01 CAM	[sound similar to altitude alerter]	1427:19 CAM	[GPWS] bank angle.
		1427:27 MX	* * *

RAC 000389

INTRA-COCKPIT COMMUNICATIONAIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
------------------------	----------------

1427:28.4 RDO-1 hey &, uh, & told me keep my radios on... uh just per normal or per uh, I mean... uh, I mean does he want us to communicate the whole way or what's going on.

1427:40 MX & might call ya and turn you back cause they did find a problem but I don't know for sure, he doesn't know either, *

1427:46.8 RDO-1

Ok tell ya what I'll be monitoring ARINC, I'll check in with Providence OPS also and LaGuardia OPS on the way and uh Bradley OPS that's not a problem. so I'll keep checkin in with company tell them. hey &, uh just to make sure I don't get anything on your pickup truck; you wanna come over and move her over so I don't uh scratch your paint with any dust or anything?

1428:03 MX uh I'll come out.

1428:04.6 RDO-1 allrighty.

1428:21 HOR-2 they might turn us back, huh?

RAC 000390

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1428:31 CAM-1	hey * its Scott * I got & s message about just keeping in touch with you guys as we're heading to Albany on this ferry flight in case they wanna turn us back, so I'm gonna I'm gonna check in with uh, uh, obviously I'm gonna * check in as (long) as I can here, then I'll check in with Providence * * check in uh with Bradley, and Hartford on and on ok? [appears to be a cellular telephone conversation]

1428:56
CAM-1 well uh we got so many stations along the route that's not a problem. I'll just have to call down on the phone and just uh say ninety four forty seven or-ninety four forty six continue to Albany or you know, go back. All right, see ya *, bye. [appears to be a cellular telephone conversation]

1429:15
HOT-2 [sound of cough]

1429:23
HOT-1 all right, beacon's on door lights out, avionics master's off clear on one, starting one.

1429:29
HOT-2 did that old man say he has a King Air one hundred?

1429:32
HOT-1 yeah... that one's what a two or three?

RAC 000391

INTRA-COCKPIT COMMUNICATIONAIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1429:35 HOT-2	that's a three fifty.		
1429:36 HOT-1	ok, but he also has a King Air one hundred.		
1429:39 HOT-2	that's his?		
1429:40 HOT-1	uh, he's the chief pilot for 'em.		
1429:42 HOT-2	ahhh, now that'd be a good job.		
1429:44 HOT-1	I guess, I don't know, this company's based out of Bedford, or New Bedford, wherever that is around here. but they let him fly up and put an extra flight cycle on him because he want's to live here. So apparently-		
1429:55 HOT-2	ohhh.		
1429:56 HOT-1	-the company's like-		
1429:57 CAM	[sound similar to altitude alerter]		
1430:00 HOT-1	-I mean he's driving the blue Vette over there so somethin's goin right.		
1430:04 HOT-1	all right, after start.		

RAC 000392

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1430:07 HOT-2	external power?		
1430:08 HOT-1	it is removed.		
1430:09 HOT-2	CWPS checked?		
1430:10 HOT-1	checked.		
1430:10 HOT-2	ice protection?		
1430:11 HOT-1	uhhhoh level one.		
1430:15 HOT-2	EFIS standby attitude indicator on?		
1430:16 HOT-1	on.		
1430:17 HOT-2	TCAS (tested) standby?		
1430:18 HOT-1	on.		
1430:19 HOT-2	after start checklist complete.		
1430:21 HOT-1	yeah I think he's a member of the QB's that's why he's got the license plate like that.		

RAC 000393

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CVR Group Chairman's Factual Report
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1430:31 HOT-1	all right we're ready to taxi with HOTEL.
1430:39 HOT-1	interesting.

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1430:42.8 RDO-2	ground Colgan uh, ninety four forty six ready to taxi, HOTEL, goin to Albany.
1430:50 HOT-2	we goin VFR or IFR?
1430:53 HOT-?	(IFR) [on captains channel, obscured by radio transmission]
1430:54 HOT-1	that's our clearance.
1431:05 GND	and Colgan ninety four forty six say it again you were stepped on.
1431:07.9 RDO-2	uh yeah we're ready to taxi with information HOTEL.
1431:12 GND	ok where are you?
1431:13 HOT-1	north ramp.
1431:12.7 RDO-2	uhh we're over at the north ramp.

RAC 000394

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1431:34 HOT-1	basically Providence... and uh it'll be out of Providence..... Providence, GALES, one fifty one Providence, four ninety five Bradley, one thirty four Albany.	1431:15 GND	roger runway two four taxi hold short one five, Colgan ninety four forty six.
1431:52 HOT-2	Providence , GALES, you said?	1431:19.2 RDO-2	taxi to two four hold short of one five, Colgan ninety four forty six.
1431:54 HOT-1	uhh, Yeah. GALES is the one fifty four radial off of Boston... its nineteen miles but we won't get that.	1432:01 HOT-2	we're gonna get the Victor one six seven, right?
1432:03 HOT-1	yes, (you'll) get Providence, and then, on course.	1432:06 HOT-2	ok.
		1432:08 GND	(Colgan) ninety four forty six cross runway one five.

RAC 000395

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1432:16 HOT-2	watch out for the sandwich box.
1432:17 HOT-1	yeah.
1432:22 HOT-1	CROSS ONE FIVE CROSSING-
1432:23 HOT-2	CROSSING ONE FIVE, CLEAR RIGHT.
1432:25 HOT-1	CLEAR LEFT.
1432:28 HOT-2	speeds are gonna be one oh four, one oh four, one fourteen, one fourteen.
1432:32 HOT-1	four fourteen fourteen fourteen me I guess uh... or do you want the one with the rig problems coming back?
1432:37 HOT-2	oh uhhh I prefer not to fly something if its broken... and I'd rather you do it because you're the pilot-in-command.
1432:47 HOT-1	all right.

RAC 000396

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1432:48 HOT-2	and a broken airplane I wouldn't wanna... screw it up.
1432:57 HOT-1	well it'll be a standard Colgan if it gets spooky on the runway abort it un-
1433:00 HOT-2	yeah.
1433:01 HOT-1	-tuh.
1433:03 HOT-2	its up to you it really doesn't matter to me.
1433:05 HOT-1	I'll drive up.
1433:06 HOT-2	ok.
1433:11 HOT-1	like I said, as long as its * up on the prop Governor none of these airplanes get spooky, I don't think.
1433:16 HOT-2	uuuh es you know. just a matter of take it easy, go slow.
1433:21 HOT-1	pretty much.

RAC 000397

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
HOT-1	these things have been blowin a lot lately I had to reset one on uh... L V... Uniform last night.	HOT-2	oh really?
1433:42 HOT-1		1433:44 HOT-2	cause they're spiking, so.
1433:46 HOT-2	I thought it was cause people keep on switchin it you know MAN cool, back to AUTO.	1433:51 HOT-1	eh. well. &'s thing says ten minutes or less taxi you don't even (bother with it).
1434:15 HOT-1	Bradley OPS is one thirty point zero also, isn't it? I believe.	1434:20 HOT-1	* from memory.
1434:20 HOT-2	thirty nothing... that sounds familiar.	1434:22 HOT-1	yeah. *
1434:24 HOT-2	I've never actually flown in there.	1434:27 HOT-1	oh. ok.

RAC 000398

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1434:29 HOT-1	yeah..		
1434:48 HOT-1	all right, ran the checklist. [sound similar to beichi] oh my.		
1434:52 HOT-2	ok takeoff data brief... we got the speeds, and I guess-		
1434:56 HOT-1	it'll be me, standard Colgan red light and emergency speeches we've done many times before, questions, comments additions?		
1435:02 HOT-2	no.		
1435:02 HOT-1	all right-		
1435:02 HOT-2	complete.		
1435:03 HOT-1	-complete.		
1435:03 HOT-2	altimeter set to... two nine eight seven?		
1435:08 HOT-2	set?... set and cross checked. flight instruments radios set checked.		
1435:13 HOT-2	auto feather?		

RAC 000399

INTRA-COCKPIT COMMUNICATIONAIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1435:14 HOT-2	flaps are zero indicating zero, three trimms are set.	1435:18 HOT-1	roger.
1435:18 HOT-2	cabins ready PA not required. taxi check complete.	1435:24 CAM-1	*
1435:26 HOT-2	nice airplane.	1435:28 HOT-1	yup. somebody's got money.
1435:31 HOT-2	Lear thirty one?	1435:33 HOT-1	not my color, but.
1435:35 HOT-2	no.	1435:35 HOT-1	I woulda gone a dark blue, but, oh well.
1435:37 HOT-2	I'd still fly it.		

RAC 000400

NYC03MA183
CVR Group Chairman's Factual Report
Attachment II - Transcript - Page 29 of 37

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1435:38 HOT-1	Oh yeah, I'd still own it too but... oh well.
1436:12 HOT-1	that's not a forty five?
1436:13 HOT-2	no.
1436:41 HOT-2	actually..... maybe it is.
1436:52 HOT-1	I can't tell 'em apart.
1436:53 HOT-2	I can't remember how many windows the thirty one has.
1437:17 HOT-1	all right. forty six is ready * *.
1437:25 HOT-1	bottom's check.
1437:26 HOT-2	top's check.
1437:28 CRM-1	ice protection (level 1).
1437:30 HOT-2	props forward condition levers set transponder and TOAS are on, environmental bleeds are off, CWP's checked.

RAC 000401

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1437:36 HOT-1	*
1437:37 HOT-2	external lights? holding.
1437:40 HOT-1	hold on the lights.
1437:43 HOT-2	eighteen-
1437:44 HOT-1	nineteen five.
1437:45 HOT-2	-nineteen five.

1438:08.0
CAM [sound similar to: increase in engine/
propeller speed]

1438:08.4
RDO-2 cleared for takeoff two four Colgan
ninety four forty six two seven zero, runway two four
heading.

1437:48.1
RDO-2 tower Colgan uh ninety four forty six, ready
to go, two four.

1438:04
TWR Colgan ninety four forty six after departure
fly heading two seven zero, runway two four
cleared for takeoff.

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1438:35 HOT-1	and... set the power.
1438:35.6 HOT-2	power's set.
1438:37.3 HOT-2	eighty knots.
1438:40.4 HOT-2	V1... rotate.
1438:46.3 HOT-1	* we got a hot trim, Steve.
1438:48 HOT-1	kill the trim kill the trim kill the trim.
1438:50.6 HOT-1	roll back Steve roll back roll back roll back roll back
1438:53 HOT-2	I got it.
1438:54 HOT-1	-(pull) back
1438:54 HOT-2	hold on- hold on.
1438:55 HOT-1	she's heavy buddy.
1438:56 HOT-1	roll it back * roll my trim Steve.

RAC 000403

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1439:00 HOT-1	do the electric trim disconnect... hold-		
1439:02 HOT-1	-all right, Steve.		
1439:04 HOT-1	hold back Steve.		
1439:04.7 HOT-1	no. go on the controls with me Steve.		
1439:06 HOT-2	I got it.		
1439:07 HOT-1	all right.		
1439:11 HOT-1	all right.		
1439:13 HOT-1	all right.		
1439:14 HOT-1	put our gear up.		
1439:14.8 CAM	[sound similar to landing gear motor noise, duration 5.5 seconds]		
1439:16 HOT-1	all right.		
1439:18 HOT-1	gimme flaps up.		

RAC 000404

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1439:19 HOT-2	flaps are up.
1439:20 HOT-1	flaps are up.

1439:33
HOT-2

You want power back?

1439:33.9
HOT-1

pull the power back. pull the power back.

1439:36.4
HOT-2

slowly.

1439:36.4
ch2

[sound similar to engine/propeller speed]

1439:40
HOT-1

all right, were gonna need both of us on this Steve.

1439:48
HOT-2

(could) I pull the breaker?

RAC 000405

AIR-GROUND COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>
1439:21.7 RDO-1	ninety four forty six uh... emergency back sir, we got a... runaway trim.
1439:28 TWR	Colgan nine * six roger, right or left downwind your choice, and report midfield.

1439:32.6⁶
RDO-1

(midfield). [HOT or RDO]

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1439:49 CAM	[sound similar to altitude alerter]		
1439:49 HOT-1	pull the breaker Steve.		
1439:51 HOT-1	pull the breaker.		
1439:53 HOT-1	I got it if you've got the trim baby.		
1439:54 HOT-2	where is it?		
1439:56 HOT-1	Find it *.		
1439:58 HOT-1	look left of the silver thing, Steve. look left of the silver thing.		
1440:02 HOT-2	left of the silver thing?		
1440:03 HOT-1	left of the silver thing Steve.		
1440:05 HOT-1	don't let go of the st- control Steve, just stay with me.		
1440:17 HOT-1	you pull back for all your worth, baby.		

RAC 000406

INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1440:28 HOT-1	just keep (pulling/holding) back for all	1440:31.0 RDO-1	* ninety four forty six is requesting three three sir.
1440:34 HOT-1	Steve (pull/hold) back.	1440:35 TWR	* * Four forty six sir, roger-
1440:35 HOT-2	ahhh.	1440:37 TWR	-runway three three-
1440:36 HOT-1	(pull/hold) back.	1440:38 TWR	-uh * Cleared to land
1440:37 HOT-1	ahhh.	1440:39 ch3	[GPWS] terrain terrain. * pull up.
1440:42 HOT-1	Steve keep-	1440:42 HOT-2	I'm pullin.
1440:42 HOT-2	I'm pullin.		

RAC 000407

NYC03MA183
CVR Group Chairman's Factual Report
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INTRA-COCKPIT COMMUNICATION

<u>TIME and SOURCE</u>	<u>CONTENT</u>	<u>TIME and SOURCE</u>	<u>CONTENT</u>
1440:44 HOT-2	#.		
1440:45 HOT-1	Steve, hold on.		
1440:46 HOT-2	uhh.		
1440:46 HOT-1	oh no.		
1440:47 HOT-1	[sound similar to scream]		
1440:47 Ch3	[GPWS woop woop pull up pull~]		
1440:47.4 C.R.M.	[end of recording]		
	[End of Transcript]		

RAC 000408

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 26

Richard J. Nelson
PO Box 20724
719 Ridgeland Street
Cheyenne, WY 82003
970-218-6211 fax 307-634-4633
E-mail: Dnelson729@aol.com

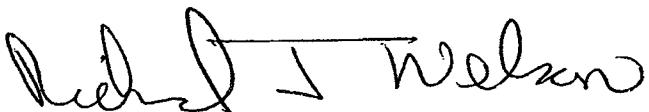
August 24, 2006

Mr. Michael G. Jones
Martin, Pringle, Oliver
Wallace & Bauer, LLP.
100 N. Broadway, Suite 500
Wichita, KS 67202

Dear Mr. Jones,

The attached addendum to my expert report date August 5, 2006, is provided concerning Dean/Weiler v. Raytheon.

Respectfully Submitted



Richard J. Nelson

Dean/Weiler v. Raytheon

***Addendum to Expert Report dated August 5, 2006
RE: Colgan v. Raytheon***

I provided an expert report, dated August 5, 2005, regarding facts and my opinions associated with the August 26, 2003, accident of N240CJ, a Beech 1900D, operated by Colgan Air, Inc. concerning Colgan v. Raytheon. Since that report I have provided deposition testimony in the matter on September 12, 2005, and I have recently reviewed the following expert reports associated with this accident.

1. John Goglia, dated July 21, 2006
2. Michael A. Conway, dated July 21, 2006
3. Gregory A. Feith, dated July 21, 2006
4. Michael E. Maddox, dated July 20, 2006
5. Donald E. Sommer dated July 20, 2006

My opinion(s) stated in the August 5, 2005, report remain unchanged by any information provided by the listed experts' reports. Notwithstanding that statement, some of those experts' opinions warrant challenge.

Pilot Qualifications:

Mr. Feith states that: "Although the F/O was unsuccessful during two practical examinations, this is not uncommon in the aviation industry and had [sic] relevance to this accident." On the contrary, receiving a notice of disapproval for a Commercial Pilot Certificate, followed by an *unsuccessful* reexamination for Commercial Pilot, is not at all common to this industry. As a former pilot examiner, the few instances I can recall of such performance are associated not with the commercial pilot certificate but with the attempted acquisition of a CFI (certified flight instructor), which is more a test of teaching ability than it is of flying ability.

As cited by Mr. Feith, according to Paragraph 4.4.0 of Colgan's simulator training program, Lesson 4, Appendix 4-15 Revision 17, dated 01 November 02, item 6 of Emergency Procedures specifies training for trim failure.

The training program rightly appears to differentiate between trim failure and trim runaway. One element of training for pitch trim failure is a jammed trim tab system, where the trim tab cannot be moved either with electric trim or the manual system. In such instances, pilots are trained to mitigate stick or yoke control forces by managing airspeed. Such knowledge would have prepared the

accident flight crew for sustaining controlled flight to a successful landing or survivable forced landing, had they not "rolled in" manual trim.

In another citation by Mr. Feith, Item 3 of the same training program provides for training for trim runaway. It should be evident that this training would instruct flight crewmembers on how to identify trim runaway. Available evidence shows that this crew misidentified their circumstances as trim runaway.

Crew fatigue and crew scheduling:

Mr. Feith states that: "There is no evidence that fatigue or any other physiological or psychological factors relevant to either crewmember caused or contributed to this accident." On the contrary, a call-back can induce frustration to flight crewmembers, particularly after completion of a duty day, when the crew could be expected to be fatigued. The NTSB has determined fatigue to be a contributing factor in aviation accidents.

For his part, Mr. Conway suggests that this (call-backs after long duty days) is normal to the industry and that he has had many long duty days. It is my experience that call-backs are not normal and are many times prohibited by union contracts. It is also my experience to be fatigued at the end of a long duty day.

This crew accepted a call-back (apparently turned down by other flight crews) for this flight after completion of two consecutive long duty-days. Initiating this flight as they did after call-back and their long duty days, this flight crew was demonstrably casual about preflight, first-flight-of-the-day aircraft checklist protocols, and sterile cockpit practices.

Preflight Actions:

Mr. Conway asserts that the flight crew knew the mechanics at the airport, but it does not necessarily follow—as he suggests—that they would have an established level of confidence in the maintenance performed on the aircraft.

Several of the experts believe that it is impossible to verify trim tab position from a position on the ground, as the horizontal stabilizer is about 15 feet above the ground, or about nine or ten feet from a flight crewmember's eyes.

For the sake of review, the Raytheon Aircraft 1900D Airliner checklist, Section IV – Normal Procedures (FAA Approved August 2001) requires, during preflight inspection, expressly for the first flight of the day, setting the elevator trim to 1 ½ units nose up. During walk-around inspection, the flight crew is required to check and verify that the tabs [elevator] are in neutral position, and there is a note that:

The elevator trim tab neutral position is determined by observing that the trailing edge of the elevator trim tab aligns with the trailing edge of the elevator, when the elevator is resting against the downstops with the elevator trim wheel set 1 ½ units up." (Note cited from normal procedures checklist page, FAA approved October 1999).

Dr. Maddox asserts that "it is simply not possible to verify the trim tab deflection angles from the ground." He participated in an exercise with a representative example of a Beech 1900D, saying that participants repeatedly adjusted the elevator trim to various values, and efforts were undertaken to associate the trim tab position with respect to the vertical stabilizer upper fairing, either removed or with it in place.

This writer notes that Raytheon checklists *do not* refer to viewing trim tab position in relationship to a fairing, but in relationship with the trailing edge of the elevator. Furthermore, the flight crew is not expected to make a quantitative determination of the number of degrees or units the tab may be displaced, as Dr. Maddox suggests, but only to determine if the tab is "in trail" with the trailing edge of the elevator(s). It is my opinion, having visited a representative Beech 1900D that it is possible to determine if the pitch trim tab is in trail with the trailing edge of the elevator(s) from a position on the ground, where my eyes were within nine or ten feet of the trim tab.

Mr. Feith states that "although the physical movement of the trim tab was opposite to that of the cockpit-mounted trim wheel, the contrasting visual cues (elevator trim tab and cockpit trim wheel) necessary for the pilot to readily determine that the commanded input utilizing the trim switch was counter to that of the wheel movement was non-existent [sic]." I was unable to discern the logic of this statement. However, the fact that the trim wheel moves in an improper direction (when driven by the electric pitch trim system), by his own admission, is clear evidence of an anomaly that demands further flightcrew action.

After providing a verbatim copy of a salient portion of the "first flight of the day" checklist, which includes the item: ***Electric pitch trim....SET FOR TAKEOFF,*** Mr. Feith asserts that "regardless of whether or not the flightcrew performed the "First Flight of the Day" [checklist] they were not provided with sufficient information to determine whether or not the elevator trim system had been misrigged." Positioning the pitch trim tab for takeoff while using the electric pitch trim requires observing the manual pitch trim position scale, where the manual pitch trim wheel would be in motion. The flight crew—had they performed this required check—was certainly provided by the opportunity to observe the improper direction of pitch trim wheel travel while the electric pitch trim was being set for takeoff. Properly discerning an anomaly, the crew would be expected to

refer it to maintenance personnel, whose responsibility would be to determine that the system was misrigged.

Later in his report, Mr. Feith asserts that "the operation of the elevator trim system appeared normal because the electric trim was moving the trim in the proper corresponding direction." The electric trim was moving the trim tab in the proper direction; however the manual pitch trim wheel would move in the improper direction of rotation, which would be readily apparent to an observing crewmember, and it clearly would not "appear normal."

Mr. Conway tells us that, knowing that "the mechanics had worked on the trim system, a good practice would have been for the flight crew to check for free movement of the trim wheel to ensure that there was no binding." It is likely that Mr. Conway can describe an industry-standard control check of the yoke or rudder pedals for freedom of travel of the elevator and ailerons or rudder where the practice is to move the control yoke or pedals throughout their entire range of travel to assure freedom of movement. Since that is a standard operating procedure inculcated from basic training, his suggestion to ensure free movement of the trim wheel similarly and logically includes checking its freedom of movement throughout its range of travel after trim system maintenance, which would have revealed that its indicated range was improper and constrained. It is my opinion that a conscientious flight crew would have checked freedom of motion throughout the range of pitch trim when retuning an aircraft to service after pitch trim system maintenance. In this instance they would have discovered the constraints on trim system range and the improper direction of rotation and travel of the manual pitch trim wheel.

Sterile cockpit procedures:

Several of the experts suggest that failure to abide by sterile cockpit protocols as this crew did while operating the subject aircraft is tolerable and is a mark of acceptable professionalism. Several suggest that not complying with the company's "First Flight of the Day" protocols is prudent and is a mark of acceptable professionalism. I strenuously disagree.

Mr. Feith asserts that the flight crew's failure to observe sterile cockpit procedures below 10,000 feet "did not create a distraction nor cause a diversion attention [sic] from the crews' flight-related duties." I consider non-compliance with sterile cockpit procedures to be unprofessional conduct.

Accident flight:

Mr. Sommer's conclusions number 8 and 9 suggest that flight manuals should "discuss methods to be utilized when the aircraft is grossly out of trim, that is, that

the airspeed needs to be minimized." As discussed elsewhere in this addendum, this fact can easily be construed as basic pilot knowledge that does not need to be inserted in approved flight manuals in order to inform flight crewmembers.

One expert suggests that this was an unpreventable accident once the airplane lifted off the runway, notwithstanding the fact that several opportunities were earlier available to the crew to discern problems with the trim control system and the improper direction of rotation of the cabin pitch trim control wheel, and a number of actions were available to the flight crewmembers after becoming airborne to mitigate the effects of nose down trim.

None of the experts appear to recognize that the aircraft was most likely controllable either to a successful landing or survivable crash landing if the crew had simply left the trim alone after rotation and had flown as if the aircraft had had a jammed pitch trim, instead of increasing control loads by inputting increasing amounts of trim (in the wrong direction, due to the misrigged manual trim control system). Elevator pitch force at rotation for takeoff was calculated to be about 50 pounds, and the crew did not declare that the aircraft was "heavy" until they had accelerated to about 128 knots. Every action they took after that determination aggravated their situation:

- 1) They continued to accelerate, increasing nose-down pitch control loads
- 2) They retracted the landing gear, reducing drag, further increasing airspeed and increasing pitch control loads
- 3) They retracted flaps, again reducing drag, further increasing airspeed and again increasing pitch control loads.
- 4) They continued increasing nose-down pitch trim by rolling in manual pitch trim without observing that control forces *increased* during motion of the manual pitch trim control wheel (and the associated trim tabs).

Properly trained flight crewmembers are cognizant of the effect of airspeed changes on pitch control forces. They are also sensitive to control loads as trim changes are made. Basic procedures are to apply whatever control pressure is necessary to hold the desired flight attitude, and to then relieve that control pressure by use of the associated trim system. Improper airmanship is to use trim systems like power steering, using trim travel to attain a desired flight attitude without using pilot control pressures. If proper airmanship procedures were followed, the pilot manipulating the controls had an opportunity to sense that control forces increased as the manual pitch trim wheel was moved. When in an undesired hole, the first rule is to stop digging.

Simulation:

Dr. Maddox concludes that "a number of simulated flight tests conducted by the NTSB showed conclusively that the flight crew could not be reasonably expected

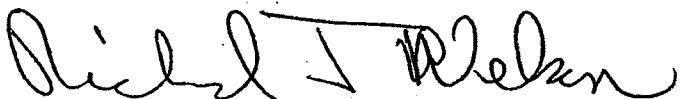
to recover from reverse-operating pitch trim." This statement is both misleading and abbreviated. The simulated flight tests attempted to replicate the accident flight profile. They *did* include setting or operating the manual pitch trim to its maximum available nose-down limits (considering the misrigged manual trim cables), as was the apparent action of this crew, with successful outcome of the flight improbable. The simulated flight tests *did not* include operating the aircraft with the trim position unchanged from where it was at rotation during takeoff, before manual trim was "rolled in," or rolling the trim back as soon as increased control forces were sensed and identified. Additionally, the simulated flight tests did not include operating the aircraft without changing configuration, and by controlling airspeed so that the aircraft did not accelerate to an airspeed where control forces exceeded the pilots' capabilities.

There is a very high probability that this flight crew could have flown this aircraft to a successful landing or survivable forced landing with reverse-operating manual pitch trim if:

- 1) They had not "rolled in" that same malfunctioning trim travel without even sensing its aggravating effect.
- 2) They had mitigated the gross increase nose-down pitch force by minimizing configuration changes (retracting the landing gear and flaps)
- 3) They had reduced power and operated at "slow flight", not permitting the aircraft to continue accelerating beyond the airspeed where they determined that the aircraft was "heavy."

Final opinion(s):

This was an avoidable accident. The issues identified herein and in my report of August 5, 2005 articulate the lack of professionalism and questionable airmanship that unfortunately culminated in the flight crewmembers' fatalities.


Richard J. Nelson
August 23, 2006

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 27

EXHIBIT

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National Transportation Safety Board
 Washington, DC 20594

Brief of Accident

Adopted 08/31/2004

NYC03MA183
 File No. 16160

Make/Model:	Beech / 1900D	Yarmouth, MA	Aircraft Reg No. N240CJ	Time (Local): 15:40 EDT
Engine Make/Model:	Pratt & Whitney / PT6A-67D			
Aircraft Damage:	Destroyed			
Number of Engines:	2			
Operating Certifier(s):	Flag Carrier/Domestic			
Type of Flight Operation:	Positioning			
Reg. Flight Conducted Under:	Part 91: General Aviation			

Last Depart. Point: Hyannis, MA
 Destination: Albany, NY
 Airport Proximity: Off Airport/Airstrip

Condition of Light:	Day
Weather Info Sirc:	Weather Observation Facility
Basic Weather:	Visual Conditions
Lowest Ceiling:	None
Visibility:	10.00 SM
Wind Dir/Speed:	Variable / 006 Kts
Temperature (°C):	23
Obstr to Vision:	None
Precipitation:	None

Flight Time (Hours)

Total All Aircraft: 2891
 Last 90 Days: 211
 Total Make/Model: 1364
 Total Instrument Time: unk/NR

Pilot-in-Command
 Age: 39

Certificate(s)/Rating(s)
 Airline Transport; Commercial; Multi-engine Land; Single-engine Land; Single-engine Sea
 Instrument Ratings
 Airplane

The accident flight was the first flight after maintenance personnel replaced the forward elevator trim cable. When the flightcrew received the airplane, the captain did not address the recent cable change noted on his maintenance release. The captain also did not perform a first flight of the day checklist, which included an elevator trim check. Shortly after takeoff, the flightcrew reported a runway trim, and manually selected nose-up trim. However, the elevator trim then traveled to the full nose-down position. The control column forces subsequently increased to 250 pounds, and the flightcrew was unable to maintain control of the airplane. During the replacement of the cable, the maintenance personnel skipped a step in the manufacturer's airliner maintenance manual (AMM). They did not use a lead wire to assist with cable orientation. In addition, the AMM incorrectly depicted the elevator trim drum, and the depiction of the orientation of the cable around the drum was ambiguous. The maintenance personnel stated that they had completed an operational check of the airplane after maintenance. The Safety Board performed a mis-rigging demonstration on an exemplar airplane, which reversed the elevator trim system. An operational check on that airplane revealed that when the electric trim motor was activated in one direction, the elevator trim tabs moved in the correct direction, but the trim wheel moved opposite of the corresponding correct direction. When the manual trim wheel was moved in one direction, the elevator trim tabs moved in one direction.

Brief of Accid... (Continued)

NYC03MA183
File No. 16160
08/26/2003
Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings

1. FLT CONTROL SYST,ELEVATOR TRIM/TAB CONTROL - REVERSED
2. (C) MAINTENANCE,REPLACEMENT -IMPROPER - COMPANY MAINTENANCE PERSONNEL
3. (F) CONDITION(S)STEP(S) IN ERROR - MANUFACTURER
4. (C) MAINTENANCE,INSPECTION - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
5. (F) CHECKLIST - NOT FOLLOWED - FLIGHTCREW

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. TERRAIN CONDITION - WATER

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows. The improper replacement of the forward elevator trim cable, and subsequent inadequate functional check of the maintenance performed, which resulted in a reversal of the elevator trim system and a loss of control in-flight. Factors were the flightcrew's failure to follow the checklist procedures, and the aircraft manufacturer's erroneous depiction of the elevator trim drum in the maintenance manual.

Aircraft Reg No. N240CJ

Time (Local): 15:40 EDT

Yarmouth, MA

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 28

Page 1

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

YISEL DEAN, et al., :
Plaintiffs, :
vs. : CASE NO.
RAYTHEON COMPANY, et al., : 05 CV 10155 PBS
Defendants. :

LISA WEILER, et al., :
Plaintiffs, :
vs. : CASE NO.
RAYTHEON COMPANY, et al., : 05 CV 10364 PBS
Defendants. :

Deposition of: LISA WEILER
Taken: By the Defendants
Pursuant to Notice
Date: May 3, 2006
Time: Commencing at 10:15 a.m.
Place: Ace-Merit, LLC
30 Garfield Place, Suite 620
Cincinnati, Ohio 45202
Before: Susan M. Gee, RMR, CRR
Notary Public - State of Ohio

COPY

Page 10	Page 12
<p>1 period of time or have you taken breaks in there?</p> <p>2 A. I've worked continuously since I was 18</p> <p>3 years old.</p> <p>4 Q. And planned to continue working during</p> <p>5 your adult life, I presume?</p> <p>6 A. Yes.</p> <p>7 Q. Do you have family here locally?</p> <p>8 A. Yes, I do.</p> <p>9 Q. Who were they?</p> <p>10 A. I have a mother, and I have a brother who ^{now} is a little older than me. He has his family,</p> <p>11 married with children. I have a sister who's a year</p> <p>12 younger than me who's handicapped, and she lives with</p> <p>13 my mother.</p> <p>14 Q. Have you ever been married?</p> <p>15 A. No.</p> <p>16 Q. No kids?</p> <p>17 A. No.</p> <p>18 Q. Tell me about your first meeting with Mr.</p> <p>19 Knabe.</p> <p>20 A. I met Scott when I went to work for the</p> <p>21 Cincinnati income tax office January of '90. He was</p> <p>22 an examiner there, and basically, the first day or</p> <p>23 two, ^{was} went around, learned office procedures,</p> <p>24 ^{was} introduced to everyone on the staff, couldn't</p>	<p>1 that?</p> <p>2 A. Yep. Yeah.</p> <p>3 Q. Was he, at that point in time when you</p> <p>4 were just getting to know him, into flying?</p> <p>5 A. Yes. I believe he had just started</p> <p>6 working on his private license.</p> <p>7 Q. As we talk today, I'm going to use a</p> <p>8 letter that your counsel has written to us that</p> <p>9 explains some background issues, sort of as a guide.</p> <p>10 In part of it, it mentions he took his first flying</p> <p>11 lesson in August of 1989, which would have been</p> <p>12 before you met him?</p> <p>13 A. Right.</p> <p>14 Q. What did you first learn about his flying</p> <p>15 when you got to know him better? What kind of things</p> <p>16 would he tell you?</p> <p>17 A. That he enjoyed flying. He loved just</p> <p>18 being up in the clouds, and it was relaxing, and his</p> <p>19 father had enjoyed flying, and he wanted to get</p> <p>20 his – initially, he wanted to get his private</p> <p>21 license. He was ^{the} type of person that did all kinds</p> <p>22 of different things.</p> <p>23 Q. Was he also, by this point in time,</p> <p>24 involved in Indy racing?</p> <p>25 A. Yes. He was very involved with that.</p>
Page 11	Page 13
<p>1 remember most of the people's names.</p> <p>2 And he was actually out on an outside</p> <p>3 assignment, and he came back like a day or two later.</p> <p>4 He had been working at the desk that I was</p> <p>5 assigned to now. So he came over, and he had to get</p> <p>6 some paperwork and things, and he introduced himself</p> <p>7 and welcomed me on board and told me if I ever needed</p> <p>8 any help to feel free to ask.</p> <p>9 Q. And this was your first day at work?</p> <p>10 A. I think it was probably like the second or</p> <p>11 third day. Yeah.</p> <p>12 Q. Explain that a little bit about how your</p> <p>13 relationship progressed with him.</p> <p>14 A. Just casual, seeing him in the break room,</p> <p>15 passing him in the office. At that point, there were</p> <p>16 a lot of younger people in the office, I'd say mid to</p> <p>17 late twenties. They had a group that would go out on</p> <p>18 Fridays after work or they'd go to ball games or</p> <p>19 something like that. He was kind of involved with</p> <p>20 that group a little bit, and then I just, you know,</p> <p>21 kind of joined in.</p> <p>22 Q. You started hanging out with this group</p> <p>23 from the office?</p> <p>24 A. Yeah.</p> <p>25 Q. Got to know him better from having done</p>	<p>1 Q. In terms of what he would talk about on</p> <p>2 these outings with this group --</p> <p>3 A. Mostly the racing.</p> <p>4 Q. So flying was part of it but not the</p> <p>5 bigger part of it at that point in time?</p> <p>6 A. Correct.</p> <p>7 Q. So he hadn't completed his pilot's</p> <p>8 training yet when you first met him?</p> <p>9 A. No.</p> <p>10 Q. When did he complete that, if you know?</p> <p>11 A. I think a few years later. '93, '94,</p> <p>12 something like that.</p> <p>13 Q. Can you identify a time frame when you</p> <p>14 first started dating?</p> <p>15 A. I would say about early '93.</p> <p>16 Q. So within two and a half, three years</p> <p>17 after your beginning work?</p> <p>18 A. Yeah. We mostly hung around with this</p> <p>19 group for about a year, and some of those people left</p> <p>20 the office. Other people went off and did other</p> <p>21 things. It kind of just ended up he and me.</p> <p>22 Q. What kind of things did you do in your</p> <p>23 early days of dating?</p> <p>24 A. We'd go to movies, we'd go out to dinner,</p> <p>25 we'd go on little weekend trips. He was involved</p>

4 (Pages 10 to 13)

SCOTT
 BSEE '92
 HIS PRIVATE
 LICENSE
 1989

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<p>1 with the racing. If the races were within 100, 200 2 miles of Cincinnati, I usually went with him. If the 3 races were, like, on the West Coast or whatever, you 4 know, I didn't go.</p> <p>5 Q. By the time you started actually dating in 6 '93 or so, had he completed his pilot's training?</p> <p>7 A. No.</p> <p>8 Q. Still taking classes?</p> <p>9 A. Yes, I believe so.</p> <p>10 Q. How often was he doing that? Was it just 11 sort of a once-in-a-while thing or was it on a 12 regular schedule?</p> <p>13 A. I'm not really sure.</p> <p>14 Q. In this earlier time frame, when he was 15 completing his initial pilot training over time, was 16 he indicating to you that it was something he was 17 just doing because he had an interest in it or for a 18 career path? At this point, I'm just focusing in on 19 that early time frame.</p> <p>20 A. I would say he just had an interest in it, 21 but it was always a possibility. He had an interest 22 in the racing, too, and there was always a 23 possibility of a career change to that, too. He 24 liked both of them equally.</p> <p>25 Q. So he did talk about trying to get a</p>	<p>1 State for his A and P license, so he was involved 2 with, getting more involved with the environment, 3 aviation environment.</p> <p>4 Q. Let's talk a little bit about that time at 5 Cincinnati State Technical and Community College. 6 From some things I've read, it suggests to me that he 7 initially started there in the automotive program.</p> <p>8 A. Correct.</p> <p>9 Q. Was that to try and further, potentially, 10 his racing work?</p> <p>11 A. No, just to acquire more general knowledge 12 about the automotive.</p> <p>13 Q. Just because he has an interest in it or 14 was he thinking about yet a different career?</p> <p>15 A. No, not a different career.</p> <p>16 Q. What caused him to stop in the automotive 17 program and shift over, if that's what happened, to 18 the airframe and power plant training?</p> <p>19 A. Because he had gotten his private license, 20 both of the programs were kind of interrelated. A 21 lot of the classes that he took in the automobile 22 aspect of it carried over into the racing, such as 23 electricity and physics and things like that.</p> <p>24 Q. So when he made decisions to begin, for 25 example, taking the automotive classes and then</p>
<p>1 long-term career in racing as well?</p> <p>2 A. Yeah.</p> <p>3 Q. How realistic of a goal did that seem to 4 be for you and him in talking about it? In other 5 words, getting into the racing business, I don't know 6 how hard that is. In some industries, it's really, 7 really difficult, and others, you can get there 8 ultimately.</p> <p>9 A. Okay.</p> <p>10 Q. Did you have a sense of that as you were 11 talking about that as a career path for him, how hard 12 that was going to be, how likely?</p> <p>13 A. Very likely.</p> <p>14 Q. Really?</p> <p>15 A. Very likely. When I met him, he was 16 already involved with a race team working for them on 17 the weekends. He would fly out of Cincinnati on 18 Friday, go to the race venue, work for them the whole 19 weekend and come back, and he did the whole season.</p> <p>20 Q. So what ultimately diverted him from 21 taking that career path and instead moving toward 22 aviation as a career path?</p> <p>23 A. I think eventually, when he did get his 24 pilot's license, it was an accomplishment. Around 25 that time, he was also taking classes at Cincinnati</p>	<p>1 change over to A and P school, was that something he 2 would do on his own, decide on his own and let you 3 know about or something you would talk about together 4 and decide together?</p> <p>5 A. He would ultimately decide, but he would 6 discuss things with me.</p> <p>7 Q. At the time he was going to Cincinnati 8 State, how far had your relationship with him 9 progressed? Were you still friends? Were you 10 dating? Were you dating seriously? Living together? 11 I don't know how you best describe that, but in your 12 own words, tell me what the state of your 13 relationship was.</p> <p>14 A. When he started?</p> <p>15 Q. Yes, when he started the automotive 16 program.</p> <p>17 A. I'd say dating seriously.</p> <p>18 Q. At some point in time, you moved in 19 together?</p> <p>20 A. Yes.</p> <p>21 Q. When was that?</p> <p>22 A. '95, '96.</p> <p>23 Q. Was he done with his A and P school by 24 then?</p> <p>25 A. No. He had actually left the City of</p>

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<p>1 if you're able to answer. The answer provided is an 2 objection and a reference to the funeral and burial 3 expenses. My question for you is: Are you able to 4 tell me today what damages you're seeking in this 5 case, the types of components of damages?</p> <p>6 MS. SCHIAVO: Again, objection for the 7 record concerning any legal theories or legal 8 issues concerning legal damage theories or any 9 kind of legal arguments or legal issues.</p> <p>10 That's, obviously, something that counsel does 11 and calls for a legal conclusion. And subject 12 to the objection, you may go ahead and answer.</p> <p>13 A. Could you restate the question again?</p> <p>14 Q. I'm asking if you're able to tell me what 15 types of things you're seeking damages for in this 16 case.</p> <p>17 A. Loss of his life.</p> <p>18 Q. Any particular, let's say, for example, 19 out-of-pocket expenses that you incurred as a result 20 of that that you're seeking reimbursement for? Let's 21 start with that as an example of the type of loss. 22 Are you able to tell me, number one, if you're 23 seeking that type of thing and, if so, what 24 components go into that?</p> <p>25 A. You mean dollar amounts or what?</p>	<p>1 that she could answer, but I think asking her 2 about damages is a legal conclusion, so for the 3 record, I once again will object to anything 4 that calls for a legal conclusion, but on, you 5 know, individual items, as I said, you may 6 answer subject to the objection.</p> <p>7 Q. I'm not asking for any legal conclusions. 8 I'm just asking whether you're able to describe for 9 me the components of damages that you believe you're 10 seeking in this case.</p> <p>11 A. I'm not able to answer that.</p> <p>12 Q. Let's look at Page 9. Do you remember 13 having received insurance benefits following Mr. 14 Knabe's death in this case?</p> <p>15 MS. SCHIAVO: Again, I'm going to object 16 for the record. You'll be able to answer this 17 subject to objections, but collateral offsets 18 and information concerning collateral offsets 19 is not allowable in court in Massachusetts. I 20 object to counsel's question and form of the 21 question as being beyond the scope of 22 discovery, not reasonably calculated to lead to 23 discoverable information and not admissible in 24 courts in this litigation. Subject to that, 25 you may answer.</p>
Page 47	Page 49
<p>1 Q. Yes. I mean, for example, funeral 2 expenses, let's say.</p> <p>3 A. Okay.</p> <p>4 Q. Are you seeking reimbursement of that?</p> <p>5 A. Yes, I am.</p> <p>6 Q. And do you know the amounts or have 7 documents?</p> <p>8 A. I have submitted an invoice, yes.</p> <p>9 Q. Any other types of categories or 10 components of damages that you can identify for me 11 that you're seeking in the case?</p> <p>12 MS. SCHIAVO: I'm going to object for the 13 record. I'll let her go ahead and try to 14 answer. She already said she's seeking 15 recompense for the loss of his life, and 16 according to the law, there are many items that 17 go into that. She may not be aware of what the 18 law allows.</p> <p>19 If you have specific issues that you want 20 to ask her about, specific items, in terms of 21 what damages are you seeking, I think that's a 22 legal conclusion, and she probably is not 23 familiar with those kinds of terms.</p> <p>24 If you have specific questions about 25 specific items, that would be a factual issue</p>	<p>1 A. I did not receive insurance.</p> <p>2 Q. Did his other family members, to your 3 knowledge?</p> <p>4 A. Yes.</p> <p>5 Q. Who did receive?</p> <p>6 MS. SCHIAVO: And, again, can I have a 7 standing objection on the collateral source 8 issue?</p> <p>9 MR. JONES: Sure.</p> <p>10 MS. SCHIAVO: Okay. You may go ahead.</p> <p>11 A. Either his mother. Probably his mother.</p> <p>12 Q. Let's talk about that a little bit, and 13 I'll refer you -- I'll ask this question to the next 14 document that will be marked in the stack, and that 15 is 21. It's a probate court document appointing you 16 as Mr. Knabe's administrator for his estate.</p> <p>17 A. Correct.</p> <p>18 Q. And you have served in that capacity?</p> <p>19 A. Yes.</p> <p>20 Q. Is the estate proceeding concluded or 21 still ongoing?</p> <p>22 A. Concluded.</p> <p>23 Q. Who handled what aspects of the 24 post-accident business? For example, I understand 25 you handled the estate. There were some life</p>

13 (Pages 46 to 49)

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ERRATA SHEET FOR THE TRANSCRIPT OF:

Lisa Weiler

I have read the entire transcript of my deposition taken on May 3, 2006, or the same has been read to me. I request the following changes be entered upon the record for the reasons indicated. I have signed my name to the signature page and authorized you to attach the following changes to the original transcript:

Page	Line	Correction
8	18	Change "dome terminal" to "dumb terminal"
9	8	Change "MCSC" to "MCSE"
9	24	Change "for the individual staff" to "for the individual staff members"
10	11	Change "He has his family" to He has his own family"
10	24	Change "went around" to "I went around"
10	25	Change "introduced to everyone" to "was introduced to everyone"
11	3	Put a period after "day or two later." (New sentence)
11	4	Change "and he had been working" to "He had been working" (new sentence)
12	21	Change "He was a type of person" to "He was the type of person"
13	11-12	"I think a few years later. '93, '94, something like that." (Scott received his private license in 1995).
16	20	Change "intermingled" to "related"
22	1-2	"Then he got on with T.W. Smith Engine. I'm thinking '96, still in school, but I think by that point..." (Scott began his employment at T.W. Smith in March 1995).
25	All	(During my deposition, I was confused with Scott's work history at Kentucky Aeromotive. Scott worked for Kentucky Aeromotive from October 1998 until March 2000. The flying season for fire patrols was full-time from March through December. He started near the end of the season in 1998. When he was scheduled to return in March 1999, he fell at home and broke his leg. He did not return to Kentucky Aeromotive until August 1999. Then, he flew from August through December 1999, and returned again to fly for them from February until March 2000).
27	1	Change "It was a commercial rating" to "There was a commercial rating"

8/1/2006

Date

Lisa Weiler

Lisa Weiler

ERRATA SHEET FOR THE TRANSCRIPT OF:

Lisa Weiler

I have read the entire transcript of my deposition taken on May 3, 2006, or the same has been read to me. I request the following changes be entered upon the record for the reasons indicated. I have signed my name to the signature page and authorized you to attach the following changes to the original transcript:

Page	Line	Correction
31-32	All	(Explained above for page 25 notes).
33	5	Change "airport" to "airline"
36	7-9	"I think until the end of that flying season, so roughly close to the first of the year, the year 2000." (Scott worked for Kentucky Aeromotive until March 2000).
36	17-23	QUESTION: "So it sounds as though he would have had a full off season." (Scott worked for Kentucky Aeromotive until March 2000. He started working for Flight Trac in May 2000).
38	8	Change "Sterling, Kentucky" to "Mt. Sterling, Kentucky"
40	1	Change "Dutchess" to "Duchess"
40	4	Change "Dutchess" to "Duchess"
63	17-22	QUESTION: "What was he trying to do to get his ATP during this time frame? Self study? Classes? (Scott was not pursuing his ATP at the time of furlough from Colgan Air. He had only worked there for two months as a First Officer. First Officers were required to fly for one year before they became eligible for upgrade to Captain; thus, requiring the ATP.
64	1-2	Change "because he was called in" to "because it has Colgan"
90	10-12	QUESTION: "Do you have anyone in particular that you blame for this accident?" (I answered "No." I interpreted the question to imply a specific person who I blame for the accident).

8/1/2006
Date

Lisa Weiler
Lisa Weiler

*Dean vs. Raytheon Aircraft Company, Case No. 05-CV-10155-PBS
Defendants' Memorandum in Support of Motion for Summary Judgment*

EXHIBIT 29

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

CONSOLIDATED UNDER
CASE NO. 05-10155 PBS

YISEL DEAN, Independent Administratrix of the Estate of)
STEVEN DEAN, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
v.)
RAYTHEON COMPANY, a Delaware corporation,) DOCKET NO: 05cv10155
RAYTHEON AIRCRAFT COMPANY, a Kansas) PBS
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air)
Express,)
Defendants.)
LISA A. WEILER, Administratrix of the Estate of SCOTT A.)
KNABE, deceased, and on behalf of all statutory)
beneficiaries,)
Plaintiff,)
v.) DOCKET NO: 05cv10364
RAYTHEON COMPANY, a Delaware corporation,)
RAYTHEON AIRCRAFT COMPANY, a Kansas)
Corporation, RAYTHEON AIRCRAFT CREDIT)
CORPORATION, a Kansas Corporation, COLGAN AIR,)
INC., a Virginia Corporation d/b/a US Air Express,)
Defendants.)
)

AFFIDAVIT OF WAYNE W. WALLACE

I, Wayne W. Wallace, hereby depose and state:

1. I am Vice President-General Counsel, Corporate Secretary & Director of Raytheon Aircraft Company ("RAC"). I am of legal age and competent to testify. I make this Affidavit based upon personal knowledge and in support of the Raytheon defendants' motion for summary judgment in the above-referenced action. The matters contained in this Affidavit are true and correct.

2. Raytheon Company ("RC") is a corporation incorporated under the laws of the State of Delaware, with its principal executive office located in the Commonwealth of Massachusetts. RC is a defense and commercial electronics firm.

3. RAC, formerly known as Beech Aircraft Corporation ("BAC"), designs, manufactures, assembles, certifies, markets, sells, and distributes special mission and commercial aircraft. In 1993, BAC manufactured the 1900D Airliner aircraft, serial number UE-40, that is involved in this litigation.

4. RAC is a wholly-owned subsidiary of Raytheon Aircraft Holdings, Inc. ("RAHI"), a Delaware Corporation. RAHI is a wholly-owned subsidiary of RC. RAC is a corporation incorporated under the laws of the State of Kansas, with its principal office in Wichita, Kansas. RAC maintains formal corporate records and financial records of itself at its principal place of business in Wichita, Kansas. RC and RAC operate as separate and individual corporations, with separate individual boards of directors.

5. RAC drafts, edits, publishes, and revises the FAA-approved Airliner Maintenance Manual ("AMM") for the 1900D Airliner and has done so since the Airliner series aircraft was first certified by the FAA in the early 1980s. Since 2001, RAC has also published the AMM in electronic form on CD-ROM. The electronic form of the AMM is known as "REPS," which stands for Raytheon Electronic Publications System.

6. RC does not design, manufacture, assemble, certify, market, sell or distribute special mission or commercial aircraft, or any component parts thereof, and RC did not do so with respect to the 1900D Airliner, serial number UE-40. Also, RC is not and has never been involved in the drafting, editing, publishing, or revising of the FAA-approved RAC AMM.

7. Raytheon Aircraft Parts Inventory and Distribution Company, LLC ("RAPID") is a wholly-owned subsidiary of RAC. RAPID and RAC are separate entities, with separate boards of directors.

8. RAPID is a parts company, and its function is to maintain a parts inventory and distribute those parts to the owners and operators of the existing fleet of RAC aircraft.

9. RAPID does not and has never designed, manufactured, assembled, certified, marketed, sold or distributed special mission or commercial aircraft.

10. RAPID is not and has never been involved in the drafting, editing, publishing, and revising of the FAA-approved AMM.

11. RAPID does not and has never given maintenance advice and did not do so with respect to the 1900D Airliner, serial number UE-40.

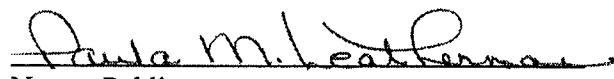
FURTHER AFFIANT SAITH NAUGHT.

Executed this 26th day of October, 2006, at Wichita, Kansas.



Wayne W. Wallace
Vice President-General Counsel, Corporate
Secretary & Director, Raytheon Aircraft Company

SUBSCRIBED AND SWORN to before me, a Notary Public in and for said county and state, on this 26th day of October, 2006.



Notary Public

My appointment expires: 8-16-2009

